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VOL. XXIV

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D. M. Campbell, Editor A. T. Kinsley, Associate Editor

Trapping Ideas

SO MANY requests are received at this office for information that has been published in this or in other magazines within recent months, it seems that many veterinarians must rely chiefly upon their memories to keep them informed as to progress in their profession.

From month to month, the pages of this and other veterinary magazines are crowded with useful information not only on scientific matters, but on the business side of practice as well. New methods of handling disease, new remedies for parasitisms, better diagnostic methods, new instruments, methods of equipping and conducting a hospital, ways of keeping a record of cases and of dispensing, how to collect accounts, successful plans for building practice, etc., in endless procession reach the veterinarian *via* his professional magazines.

The memory cannot retain all or even a considerable part of these new things that all together encompass the progress that is made by the profession and in the main mean the success of the individual. It is a matter of years before they find their way into text books and thus become readily available for reference. In the time that intervenes between the publication of these improved methods in magazines and the time they are given distribution in text books, usually from three to several years, they are largely lost to the reader who follows no systematic plan for trapping these ideas and holding them where they are available when the occasion comes to utilize them.

Many plans have been offered for making the varied contents of professional and trade magazines available when wanted. Of such plans perhaps, some form of alphabetical card index is the most generally useful, since it is least complicated and being simple in execution and requiring but little effort to keep up to date, it is more likely to be carried out than more elaborate schemes.

One plan of trapping ideas is shown in cards in the accompanying illustrations. Such a scheme is flexible enough to fit any type of practice, and to keep a record of magazine articles with any degree of comprehensiveness desired. For the average practice it might not require more than 30 minutes for each issue of the magazine and that means only a minute a day.

None of the developments of veterinary science during the past three years can have found its way into strictly veterinary text books. This means that for veterinarians, the veterinary magazines are the repositories of recent discoveries in light therapy, canine distemper, coccidiosis of cattle, anthelmintic treatment, anaplasmosis, B. C. G. vac-

cination, anemia of suckling pigs, range paralysis in poultry, necrotic enteritis of swine, swine erysipelas, post vaccination troubles, the rapid agglutination test for contagious abortion, fright disease in dogs, black tongue in dogs, tularemia, undulant fever, nutritional ailments and vitamins, to mention at random only a few of the matters in which marked progress has been made, and our conceptions radically changed within the past three years.

Figs. 1 and 2 illustrate indexing of subjects on which the literature is sharply limited and requires no subdivision. Fig. 3, on the contrary, might with advantage

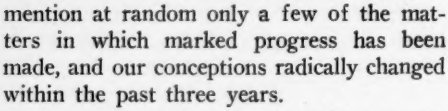
Anesthesia – Epidural – Benesch
1. Agonetalin in Cows Vet. Med. Oct. '26 P. 467
2. Case report Vet. Med. Jan. '27 P. 27
3. Technic of Vet. Med. Mch. '27 P. 119
4. In Cattle Practice Vet. Med. Aug. '27 P. 332
5. In Equines & Bovines Jour. A.V.M.A. Dec. '27 P. 327
6. In Horse or dog and Cat Vet. Med. Jan. '28 P. 36
7. In Veterinary Surgery Vet. Med. Feb. '28 P. 62
8. In Bovine Surgery Vet. Med. Mch. '28 P. 140
9. Regional Anesthesia Vet. Med. Apr. '28 P. 188
10. In Everted Uterus Vet. Med. Sept. '28 P. 388
11. In Swine Obstetrics Vet. Med. Oct. '28 P. 471
12 Widely Adopted Vet. Med. Dec. '28 P. 523
13. In Dog and Cat Vet. Med Apr. '29 P. 176

Fig. 1.

be subdivided into, e.g., nutritional ailments of poultry, of swine, of cattle, of small animals and mineral deficiencies; thus indexing this subject on five cards. Where

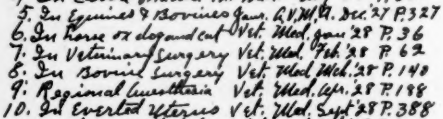
Br. Abortus Infection In Man
1 Of Bovine origin Vet. Med. Oct. 26. P. 500
2 Wesfers Infected from Man Jour. A.V.M.A. Jan. '27 P. 459
3 A Rabbit Nekulli Mieiser Vet. Med. Feb. '27 P. 45
4. Cases in Man Vet. Med. Dec. '27 P. 487
5. History of Vet. Med. Jan. '28 P. 42
6 Prevalence in Montana Vet. Med. Dec. '28 P. 521
7 Virulence of Jour. A.V.M.A. Dec. '28 P. 94
8 And Milk Pasteurization Vet. Med. Jan. '29 P. 2
9 Undulant Fever Vet. Med. Jan. '29 P. 8
10 And Tularemia Vet. Med. Mch. '29 P. 135
11 Human Infection Jour. A.V.M.A. May '29 P. 883

Fig. 2.

there are many titles on a subject, as in Fig. 3, both sides of the card may be used and where necessary several cards on the same subject may be clipped together. It will usually be found more convenient, however, to subdivide subjects so they do not occupy more than the two sides of a single card.

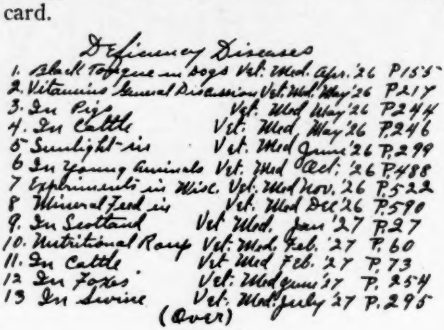
Deficiency Diseases
1. Shark Toxicity in Dogs Vet. Med. Apr. '26 P. 455
2. Vitamins General Discussion Vet. Med. May '26 P. 217
3. In Pigs Vet. Med. May '26 P. 244
4. In Cattle Vet. Med. May '26 P. 246
5 Sunlight-ics Vet. Med. June '26 P. 299
6 In Young Animals Vet. Med. Oct. '26 P. 488
7 Supplements in Misc. Vet. Med. Nov. '26 P. 522
8 Mineral Feed in Vet. Med. Dec. '26 P. 590
9. In Scotland Vet. Med. Jan. '27 P. 27
10. Nutritional Roup Vet. Med. Feb. '27 P. 60
11. In Cattle Vet. Med. Feb. '27 P. 73
12 In Foxes Vet. Med. June '27 P. 254
13 In Swine Vet. Med. July '27 P. 295
(Over)

Fig. 3a.

As has been said, the more simple the plan, the better on the average, because it is the more likely to be followed; but giving the full title of the articles indexed with names of the authors is advantageous in some cases. Some include a short abstract of the article on the index card, using a separate card for each discussion, but such a plan while very convenient for reference, is too cumbersome for most busy practitioners to keep up.

The veterinary practitioner of today must make use of a wide scope of current literature not only if he would be up-to-date, but to avoid being very much behind the times. If he must search through many volumes

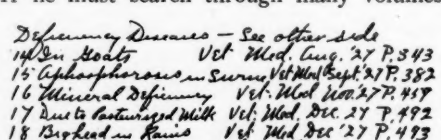
Deficiency Diseases – See other side
14 In Goats Vet. Med. Aug. '27 P. 343
15 Asphosphorous in Swine Vet. Med. Sept. '27 P. 382
16 Mineral Deficiency Vet. Med. Nov. '27 P. 457
17 Due to Pasteurized Milk Vet. Med. Dec. '27 P. 492
18 Big Head in Rats Vet. Med. Dec. '27 P. 493
19 Research into Vet. Med. Dec. '27 P. 495
20 Green Feed-Poultry Vet. Med. Jan. '28 P. 25
21 Agalactia in Sows Vet. Med. Jan. '28 P. 30
22 Coarty Disease Vet. Med. Jan. '28 P. 39
23 Phosphorous in Swine Vet. Med. Feb. '28 P. 63
24 Cause of Abortion Vet. Med. Mch. '28 P. 126
25 Anemia in Pigs Vet. Med. Apr. '28 P. 178
26 Rickets in Poultry Vet. Med. May '28 P. 221
(See card No. 2)

Fig. 3b.

to find the information desired, he is likely to do without it. Some sort of index or ready means of finding what he wants is essential. The simple plan discussed in the foregoing will serve in most instances and requires very little time or effort if the index is kept up month by month. The in-

dexing need not be complete to be useful; if only a few subjects in which the practitioner is most interested are listed in the index, it is useful to that extent. Although its value increases directly as the period covered by it is extended, it may be used from the first month after it is started.

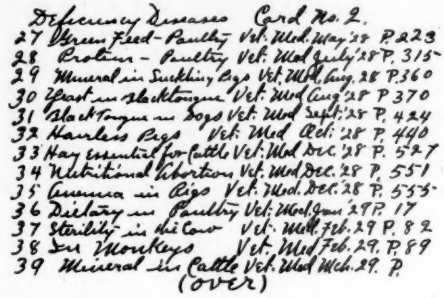
Deficiency Diseases Card No. 2.
27 Green Feed-Poultry Vet. Med. May '28 P. 223
28 Protein - Poultry Vet. Med. July '28 P. 315
29 Mineral in Suckling Pigs Vet. Med. Aug. '28 P. 360
30 Yeast in Blacktongue Vet. Med. Aug. '28 P. 370
31 Blacktongue in Dogs Vet. Med. Sept. '28 P. 424
32 Hairless Pigs Vet. Med. Oct. '28 P. 490
33 Hay essential for Cattle Vet. Med. Dec. '28 P. 527
34 Nutritional Abortion Vet. Med. Dec. '28 P. 551
35 Anemia in Pigs Vet. Med. Dec. '28 P. 555
36 Dietary in Poultry Vet. Med. Jan. '29 P. 17
37 Sterility in the Cow Vet. Med. Feb. '29 P. 82
38 Sex Monkeys Vet. Med. Feb. '29. P. 89
39 Mineral in Cattle Vet. Med. Mch. '29. P.
(OVER)

Fig. 3c.

A convenient card to use is an ordinary 4x6 inches ruled card, used in card files. The cards shown in the illustrations are this size. The illustrations having been reduced for reproducing. An attractive box or cabinet capable of holding 250 such cards may be had for about $1.60. A larger cabinet, 1200 card capacity, costs about $3.25. An envelope box or a shoe box will serve the purpose. A 22-letter set of alphabet guides will allow for sufficient separation for a considerable period; it costs 35 cents for the plain or about $1.00 for the celluloid tipped guides. Cards of the best quality cost about 30 cents a hundred, or $2.45 a thousand. A complete outfit, box, 200 cards, and set of alphabet guides of cheaper quality may be had for $1.50, but the better grade is more satisfactory.

Intravenous injection of calcium eosinate will protect against anaphylactic shock by causing a colloidal change in blood plasma. —*Bio. Abst.*

Chickens are susceptible to bovine, human and avian tubercle bacilli. The feeding of bovine tubercular refuse, or human sputum laden with bovine and human tubercle bacilli results in infection.—*Bio. Abst.*

EXCESSIVE LOSS OF SPRING PIGS

The loss of spring pigs has been extraordinarily large in the intensive hog raising states. This heavy loss was primarily the result of the severe cold weather, causing the sows to remain in their beds and thus get insufficient exercise.

Many breeders report an unusual loss of pigs from one to three days after farrowing, and in numerous instances entire litters were undersized and of low vitality.

Some of the weakened pigs survived, but have not developed as they should. They constitute a liability because they are prone to various infections and already many instances of the occurrence of enteritis in such pigs have been reported. This malady invariably occurred first in the undersized, runty pigs and spread to those that were normal in size and apparently healthy.

It is now evident that the spring pig crop is relatively small and there will probably be an excessive loss due to enteritis and other diseases. That there will be considerable trouble following vaccination with serum and virus is more than probable because of both latent and active infections. An outbreak of cholera under present conditions will be difficult to control and the post-vaccination losses probably will be excessive.

The practitioner has a responsibility that should not be underestimated in safeguarding the swine industry. Each year apparently requires additional skill in the differential diagnosis of the numerous swine diseases.

It is probable that the swine problems this year will be as formidable if not more formidable as those of years gone by.

Ear ticks are more or less troublesome in some sections of the country. These parasites can be destroyed in the ear by the injection of a mixture of two parts by volume of pine tar and one part by volume of cotton seed oil. It may be necessary to warm this mixture. This treatment is quite effective and when necessary it can be repeated every 60 days.

Live Stock Remedies*

By A. E. LANGWORTHY, Topeka, Kansas
Control Division, State Board of Agriculture

THERE are registered in Kansas about 625 remedies for live stock. It would seem that from this number of remedies every animal in the state would be well taken care of, not merely the horses, cattle, hogs and poultry, but the dogs and cats as well, for there are registered in the Control Division of the State Board of Agriculture remedies for dogs and cats, as well as those for the other domestic animals. It is surprising to see how many different ingredients are used in the manufacture of these remedies. Many of the manufacturers, in applying for the registrations of their remedies, are particular to give the plain English name of the various ingredients, evidently feeling that they are using such good material in their remedies that they would like to have their customers know just what their remedies really are. On the other hand, some manufacturers apparently want to use names that are not in common use in order that their customers may not know what they are using. Some manufacturers appear to think that they have hit on a combination of drugs that will do things that never have been done before, and that they must keep the names of these drugs a profound secret, presumably to prevent some competitor from making as much money as they are making; but it looks to us sometimes, as though they were afraid to let their customers know what common, everyday stuff their remedies are actually composed of.

The live stock remedy law provides that the English name of each ingredient used in the manufacture of a live stock remedy must be given in the label, on the outside of each package of live stock remedy sold in this state, but does not require that the proportion or percentage of each ingredient be given, only that when certain active drugs are used, the actual percentages of such very active drugs must be shown in the label on each package, and that when any filler, such as charcoal, common salt, corn meal, screenings, shorts, sulphur, water, etc., is used in a live stock remedy for the purpose of increasing the bulk or weight, the maximum percentage of such substances must be stated in the label on each package. It is this provision of the law that many manufacturers try so hard to avoid complying with. As the purpose of the law is, in part, to inform the purchaser of a live stock remedy as to what the remedy he is proposing to buy is composed of, the Control Division of the State Board of Agriculture keeps close watch to prevent the evasion of the law in this particular.

When an application for the registration of a live stock remedy is presented to the Control Division in due form, it must be accepted; therefore, the fact that any given remedy is registered should not be taken as evidence that it has the endorsement or approval of the state. It appears that some people think that because a remedy is registered, it is approved or recommended by the state, which is not so. Some of the salesmen of these remedies were quick to take advantage of this erroneous idea and used it to their advantage by representing their remedies as having the endorsement of the state, pointing to the tax tag or stamp issued by the state as proof of their statement. This was brought to the attention of the authorities and they immediately took such steps as were available to counteract this erroneous idea and the newer tax tags and stamps state plainly on their faces that "no recommendation of this remedy is either expressed or implied hereby," and as a tax tag or

*The Kansas stock remedy law has attracted much attention from veterinarians in surrounding states. It is generally conceded to be the fairest law on this subject so far enacted by any state. An essential provision of this law for the prevention of fraud on the live stock owner is the provision that statements on the label must be true not only as to the composition of the alleged remedy but as to its action; i. e., if a product is stated to be a cure for hog cholera or a preventive for abortion it must in fact be such a cure or preventive. If it is claimed to be a treatment for necro-enteritis it must be a reasonably effective treatment for that ailment. The law applies to proprietary remedies dispensed by veterinarians in the original package as well as to those sold by peddlers.—Ed.

stamp must be on the outside of each package of live stock remedy, whether large or small, when offered for sale or sold in this state, purchasers of live stock remedies may see that the state does not recommend them.

The registration of live stock remedies is not optional with the authorities—that is, they cannot say "we will register and permit the sale of this remedy, but we won't register and let that fellow sell his remedy." In other words, absolutely no partiality can be shown, all manufacturers must be treated exactly alike, and when a manufacturer offers an application for registration of a live stock remedy in compliance with the law and the rules and regulations made under and by authority of the law, the application must be accepted.

If some one should apply, in due form, for the registration of a mixture of salt and water as a live stock remedy, the application would have to be accepted. The point has been raised that if it is known that a given mixture is of little or no account, why should it be registered and permitted to be sold? The answer is that many of these remedies are made outside of this state and therefore come under the provisions of the interstate commerce act when shipped into this state, and the Supreme Court of the United States has ruled that a state can regulate sales within the state under such circumstances, but cannot prohibit them. Therefore, those who buy live stock remedies should read the list of ingredients shown in the label very carefully, and absolutely refuse to buy any live stock remedy that does not have the list of ingredients on the outside of the package in plain sight. When the list of ingredients of a remedy shows that it is composed of a large amount of any of the materials classed as fillers, such as salt, charcoal, corn meal, screenings, shorts, sulphur, water, etc., particular attention should be given to the amount or percentage of these fillers. For instance, if a remedy has, we will say, 30% of common salt, 40% of shorts, 25% of corn meal, it is evident that there is only about 5% of real medicine in the mixture. The question is, then, is the mixture worth the price charged for that amount of medicine?

Many of the agents selling live stock remedies are such smooth talkers that they will talk one into saying "all right," and before one realizes it he has signed a contract to purchase a large amount of stuff at a high price that he may not really want, but the salesman has the signed contract to take and pay for the stuff and he is not to be found. Some of these salesmen do not even take the trouble to come and see you, but, taking advantage of the radio, broadcast their talk in favor of their remedy, hoping that many will hear and believe what they say. If you purchase a remedy on statements made by radio and the article is not as represented, you are in the same position as though you had given a contract to an agent. If you purchase from local dealers only, and the material is not as represented, or anything else develops that is wrong with the transaction, you can find the person who is responsible and get such satisfaction as the law affords, for local dealers are nearly always residents of Kansas and therefore subject to Kansas laws.

One good thing about most live stock remedies is the directions which practically all of them give for the care of your stock, and, after all, it is the care you give your stock that really counts. If you take good care of your stock, you probably won't need to spend much money for live stock remedies, but, no matter what remedy you use, or how good it is, your stock won't do well if it does not have proper care and plenty of sound, clean, wholesome food and pure water.

Ergosterol is the name of the anti-rachitic chemic substance found in fish oil. This substance is found in an inactive state in yeast and in some fungi. Exposure to ultraviolet rays from the sun or from artificial sources gives yeast ergosterol anti-rachitic properties. A process of activating yeast ergosterol has been developed by Bills and it is now being manufactured under the Steenbock patent. This product will be sold as a substitute for cod liver oil and will no doubt have a ready sale as it does not become rancid and can be more definitely standardized than cod liver oil.

The Business Side of Animal-Disease Control*

By JOHN R. MOHLER, Washington, D. C.

Chief, Bureau of Animal Industry, United States Department of Agriculture

WHEN asked to speak on the subject "Protecting the Live Stock Industry Through the Control of Disease," it seemed to me that this great question was one more appropriate for a symposium representing different views than for the remarks of an individual. Such a question has many sides and angles. It involves research. It calls for veterinary service. It introduces the element of public welfare with need for Federal, state, and county control. It obviously concerns live stock producers, adding one more consideration to the already complex business of animal production.

Because of this very large field of action and the fact that the technical and administrative sides of the work have been so much stressed in the past, I wish to speak briefly on the economic or business side of animal-disease control.

Winning the War Against Waste

In industrial life there has developed in recent years an aggressive war on waste. Its particular objectives are to reduce production costs in every feasible way. Such efforts in turn have created a great demand for facts. Executives must have dependable facts and figures concerning present and proposed methods of operation.

With the foregoing remarks as a background we may approach a side of animal disease-control work that has received comparatively little attention in the past. Whereas in human medicine, life must be saved with slight regard to cost, veterinary medicine as a rule must take into account the economic value of the animals to be treated. There is a natural reluctance on the part of live stock owners to incur expense in treating or protecting their live stock against disease unless they have ample and convincing proof that such protection is justified financially. That the benefits should at least balance the cost is commonly conceded. But I doubt whether either the live stock industry or the veterinary profession has fully realized the extent to which disease prevention can be made a distinct asset.

Maps and Charts Give Graphic Picture of Situation

Losses from animal diseases do not lend themselves to precise statistical analysis. Those caused by animal parasites are especially difficult to determine by reason of the insidious nature of their attacks, resulting in stunted growth ofttimes rather than actual death. Yet the Bureau has been approached so often for the best facts available that we have been gathering data from many sources, piecing it together, comparing and checking analogous figures obtained from different sources, making maps and charts, and summarizing the data in a form that can be understood by both the layman and the professional worker.

In tuberculosis-eradication work the Bureau has been fortunate in obtaining from state veterinarians, Bureau inspectors, veterinary practitioners, county agents, commercial agencies, and live stock owners some highly interesting reports on this subject. These have been summarized in manuscript form, and I trust that when published the compilation will be helpful, especially to field employees. It deals with the economic value of control work largely from the live stock owner's point of view. It enables him to judge from the experience of other stockmen what he may expect when he submits his herd to the tuberculin test. It indicates how much more his animals will be worth when free from the disease. It reports the effect of tuberculin testing on the subsequent production of dairy herds, showing that in-

* Presented at the Tenth Annual Eastern States Conference on Tuberculosis and Other Diseases, Springfield, Mass., June 18, 1929.

creased production may be expected. It points out the danger of postponing tuberculin testing since such action generally causes losses greater than the income obtained from cattle that proved later to be tuberculous. It indicates how many tests are usually required to free slightly infected and heavily infected herds from tuberculosis.

The evidence shows that tuberculin testing tends to broaden the outlet for live stock and dairy products from a farm, often resulting in new local industries and a saving in hauling and other marketing costs. It shows that in recent years the owner's loss from the condemnation of tuberculous cattle is but a small fraction of the animal's appraised value, and that this slight loss is soon retrieved in the form of better prices for live stock and their products.

Millions in Direct Benefits

The question of premiums paid for hogs from modified accredited areas is of greater interest probably in the Corn Belt than here in New England. Yet it is noteworthy that during the last three years more than $2,000,000 has been paid as premiums for hogs shipped from modified accredited areas. The amount of premium money has frequently exceeded the entire cost of eradicating bovine tuberculosis from such areas.

The forthcoming publication, to which I just referred, consists of two principal parts, one dealing with official data relating to economic features of the work, and the other with the reports of stock owners and of public officials having first-hand knowledge of the subjects discussed. Several charts showing the extent of infection among cattle, swine, and poultry and the effectiveness of testing as a means of eradicating the diseases accompany the text. I will not go into further particulars since other papers on this program, no doubt, will deal with this subject to some extent.

The Bureau has been fortunate in obtaining also considerable data relating to losses caused by other diseases and parasites. The familiar system of swine sanitation for controlling roundworms of hogs has resulted in very tangible benefits, which have already been published and appear to have greatly stimulated the use of the system on an increasing number of farms.

An Asset to Animal Husbandry

For those who may not be familiar with typical results derived from the swine sanitation system, the following benefits are reported by farmers: By its use one can raise as many pigs from two sows as are usually raised from three under the usual dirty hog-lot conditions. The pigs are ready for market about six weeks earlier and there is the accompanying saving in feed and care. In addition the herds are of more uniform size and are practically devoid of runts.

In the case of sheep the Bureau, several years ago, supervised the treatment of 12 farm flocks in Schuyler County, Mo., for the control of stomach worms. The flocks contained, altogether, more than 2,000 sheep. Not only were stomach worms eliminated, but wool production increased about 1½ pounds per head. There were still other benefits, including better prices for feeder lambs and approximately 25% increase in the weight of the lambs.

Uncontrolled Diseases Limit Areas of Production

The practical value of sanitation and disease-control methods extends likewise to the poultry industry. Successful turkey raising, for instance, depends very largely on ability to protect turkeys from the cecum worm which causes blackhead. This one disease, I believe, is chiefly responsible for the decline in the number of turkeys in the United States from more than 6½ million in 1900 to about half that number in 1925, which is the latest date for which we have dependable figures. Here in New England, where the Pilgrim Fathers held the first Thanksgiving, the number of turkeys, at first wild and later domestic, has steadily declined. Fortunately, blackhead disease is now being prevented by several systems and there are favorable prospects for the reestablishment of profitable turkey raising in regions where the conditions are favorable and where flock-owners familiarize themselves with sanitation requirements and follow them strictly.

These are but a few of the many exam-

ples that could be cited, showing how live stock diseases influence the extent and distribution of animal production. When a veterinarian or an extension worker can conclusively show that a certain test, or a system of sanitation, or recommended treatment has given a handsome return for the cost or inconvenience, he has already answered the great present-day economic question, "Does it pay?"

It would be highly gratifying if some statistical agency having the full confidence of the public were able to make a thorough and far-reaching economic study of animal diseases with special reference to the losses they inflict on the live stock industry of this country. We need more and better information than the limited amount now at hand. We need to know more definitely how the various branches of stock raising would respond if freed fully from the handicaps of diseases and parasites. But until a better system can be worked out, it appears that such surveys will have to be made in much the same manner as in the past. That is, the agencies engaged in control and eradication work must be largely responsible for obtaining the results, analyzing and interpreting them. Just how much time and effort should be devoted to this subject is a matter of opinion and probably will need to be determined according to needs that may arise.

Live Stock Values Add Importance to Disease Surveys

But in view of the constant desire of the live stock industry to reduce production costs in every practicable way and otherwise keep its house in good order, I suggest that the veterinary profession can greatly advance disease-control work by proving definitely that disease control pays. More than that, the facts should show which measures pay best and approximately how much. The gathering and dissemination of such evidence is virtually preliminary work in animal-disease control and should prepare the way for the more personal service of the trained veterinarian, whether official inspector or private practitioner.

Current interest in improved live stock also has a very important bearing on this question. When farm animals are well bred and are consequently more valuable, interest in protecting their health is obviously greater than in the case of common or inferior stock.

As stated in my introductory remarks, I consider this question too comprehensive for exhaustive discussion in the time I have occupied. Possibly, however, it may be of sufficient interest to bring about further consideration and study. I wish to assure this conference also that the Bureau welcomes any information relating to the economic benefits of animal disease-control work. All data furnished will be put to the best possible use and will supplement the information now at hand.

A large percentage of the diseases of the reproductive apparatus which prevents or retards conception in breeding animals, is in the main due to the invasion of the various organs by certain microorganisms. Of these *Bacterium abortus* Bang is by far the most important.—Boyd.

Missouri produces about fifty million chickens each year. However, only about 30 million survive. That is, approximately 20 million, or nearly two-fifths, die. The principal loss occurs in the baby chick and is the result of not only the ravages of disease, but also inexperience of the producer and the lack of facilities for caring for the flock. The loss of poultry in Missouri costs the industry over $2,000,000 annually and losses in other states are proportional. The veterinarian should appreciate the significance of poultry diseases, which cause losses equal to if not greater than the losses due to diseases of cattle and hogs.

The same general factors apply to the losses of chickens as to the swine and cattle, viz: failure to recognize the value of sex hygiene; improper feeding; insanitary surroundings, and improper management. These excessive losses are preventable and the future development of the live stock industry is dependent upon diminishing infant mortality in farm animals.

AN EQUINE EPIZOOTIC

During the early fall and mid-winter of 1927 and 1928 I encountered a large number of cases of Equine sickness, of a definite type much resembling in clinical actions that dread scourge swamp-fever. On perusing my notes made during that time, I find that although all occurred within the same municipalities i. e., North and South Qu'Appelle, Saskatchewan, yet with the exception of two almost adjoining Indian Reservations, the cases were scattered around on various farms, many of which were in no way directly connected with each other and actually in many instances being miles apart. To give a typical instance of observed symptoms and sequelae:

A client called me and advised he had a very sick mare—on arrival knowing that the man was by way of being a pseudo vet, made a careful examination of the mare before subjecting the gentleman to the usual necessary catechism as to duration of disease, medicine given, etc. The patient had a feeble but rapid pulse, greatly accelerated respiration, temperature 106.2° F., cold and clammy ears and extremities and thoroughly dejected appearance with all visible mucous membranes more or less cynotic. She had been given, six hours previously, a good dose of oil and about an ounce of sweet nitre which the "resident physician" had always found a very good thing in such cases.

Asked if some of the other animals were sick, and he said "no," but one had died three days before with pneumonia. (He said he knew it was that because he had seen so many of them die from the same disease previously). In the present instance he said he had a bowl of mustard ready mixed up "should he apply it to lungs." Knowing such to be his desire, I O. K.'d the suggestion. I administered four ounces of acetanilid with caffein citrate to counteract the depressant effect of the former, and left two doses of ammonium carbonate with nux to be administered *per os* in a suitable vehicle, between then (8.00 p. m.) and the next morning when I planned to call again. I left the thermometer and said I would ring up before I came for a report.

The morning's bulletin said the mare seemed quieter but he could not read her temperature. This latter, on arrival, I saw registered 96°—I accordingly advised him to hang out the crepe, as his mare would not survive. True to form, she passed out at 10 P. M. that night. He said she just seemed to rear up, choke and die. I posted the animal and except for finding distended pericardium, enclosing a fairly large quantity of sanguinous fluid, with highly conjested lungs, there was not much else to be observed microscopically, to indicate the source of the trouble.

While mentioning these findings, I would say that in only one other instance, among many autopsies made of such cases during this period, did I find any other marked symptoms than those of pulmonary conjestion, and that case which was an Indian reservation horse, found in a dying condition, showed intestinal petechiae as well.

Several other farmers in the neighborhood had called me in, saying their animals were sick, some evidencing difficulty in breathing alone or in conjunction with marked inco-ordination of gait and anemic membranes, others were apparently normal until asked to work and then gave evidence of debility and weakness.

On summing up a number of cases and comparing their symptoms, they appeared to be in the state usually observed after an attack of influenza, only all visible mucus membranes were anemic and not icteric.

About a week or ten days following his first call and the loss of the two animals before mentioned, the owner quoted above, phoned in and said he had two more horses sick, acting the same way as the others. I suggested injecting of the remaining horses on the estate, some

15 in all, with an influenza bacterin giving each adult animal 2cc. followed up with Fowlers solution 12 drams daily—the two sick animals recovered and no more cases were reported.

All other individual cases were then given the same treatment with similar results.

So much for curative measures: On one of the Indian reservations, two brothers owned 45 head of horses and although several neighbors had lost an odd horse and had other ones sick, their animals had escaped, I therefore gave the 45 head in question hemorrhagic septicemia bacterin and not a single one contracted the disease.

The critical reader at this stage may remark "sounds O. K., but what was the diease? and if not known, what was the use to give a specific bacterin."

My reply is, that not recognizing the disease, but desiring to do something, I could at least treat the observable symptoms and anyway, by raising the blood count, undoubtedly leucocytic activity would be stimulated with beneficial results, and apparently it was, for not a single case, out of two or three hundred, thus treated were affected by the disease, and of those which were already affected prior to inoculation but were treated within 24 hours of the appearance of the symptoms, recovery took place.

One rather interesting feature of this disease is that during the worst period of the outbreak, five imported English thoroughbreds were shipped into the district direct from the Old Country. They each contracted the disease, which, coupled with the effects of shipping fever, which they had caught en route, reduced them to a pitiable condition of emaciation and debility. They certainly looked as though they would never race again.

The treatment outlined above was also given but the Fowler's was substituted by fairly large doses of triple arsenates and neuclin t.i.d., (for two weeks and then the Fowler's solution).

Each one of these five race horses brought in the money last season at several of the largest Western Canada race meets.

Saskatoon, Sask. F. M. Wheatley.

COW ABORTS ONE TWIN CARRIES THE OTHER FULL TIME

Here is an interesting story of Jersey heifer 20 months old. This heifer was bred July 23, 1928 and on January 10, she aborted a calf and was off feed and very weak for several days. Then she came back on feed and did fine, and on April 29, 1929, gave birth to a healthy heifer calf and is giving four gallons of milk a day now. This heifer belongs to L. E. Blessing, living three miles north west of Kind City, Missouri, and the facts as above given are vouched for by him and his son.

King City, Mo. E. D. Criswell.

A CASE OF INVASION OF THE LIVER IN MAN BY FASCIOLA HEPATICIA*

R. Croste tells of a man, suffering from emaciation, digestive disturbances and diarrhea, who came to the hospital in Bayonne, France, in July, 1928. These symptoms became worse; three months later icterus appeared and emaciation became more pronounced. The temperature was 104° F. Diagnosis: an obstruction in the gall duct. During the operation, when the duct was incised, a liver fluke was removed with a probe. In spite of a drain that was put in place, no gall escaped. The man died 48 hours after the operation; the gall duct was tightly packed with liver flukes. When inquiries as to the probable cause were made, his relatives stated that the patient had the habit of gathering watercress in the vegetable gardens of the neighborhood and eating it raw. It is known that sheep kept in this locality are heavily infested with liver flukes, so that the infection was evidently caused by eating plants carrying cysts of fasciola hepatica.

*Translated by C. H. Schultz, Chicago, from *Annales de Parasitology*, Vol. 6, No. 3.

An Attempt to Eradicate Bovine Tuberculosis from Cattaraugus County

By VERANUS A. MOORE, Ithaca, New York,
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WITH the aid of appropriations from the county, from the state of New York and from the Milbank Memorial Fund, the Board of Health of Cattaraugus County, New York, has undertaken in the past few years to set up in Cattaraugus a thorough and efficient county health service, that would serve as a demonstration in rural public health administration. This undertaking is known as the Cattaraugus County Health Demonstration. The advisability of attempting to eradicate bovine tuberculosis from the county was recognized as one of the first requisites to insure a safe milk supply. The Cattaraugus County Farm and Home Bureau Association, in cooperation with the Board of Supervisors, had undertaken the task in which it had enlisted the demonstration services. It was clear that the production of milk from tuberculous cattle, to be consumed in the cities and countryside alike, could not be considered in keeping with the essential purpose of the demonstration. The cooperation of the Federal Bureau of Animal Industry and the New York State Department of Farms and Markets was subsequently secured by a committee appointed by Dr. William H. Welch, chairman of the Advisory Council of the Milbank Memorial Fund. This committee, which was to serve as an Advisory Committee on Bovine Tuberculosis to render technical advice in the attempt to eliminate tuberculous cattle from the county's dairy herds, was composed of: Theobald Smith, M.D., director Department of Animal Pathology of the Rockefeller Institute, Princeton, New Jersey, chairman; William H. Park, M.D., director of the Bureau of Laboratories of the New York City Department of Health; and Veranus A. Moore, M.D., dean of the New York State Veterinary College at Cornell University.

The public has been interested for many years in the control of bovine tuberculosis. The existing knowledge of human infection with bovine tubercle bacilli and the transmission of the organism through milk from infected cows, especially those having the disease in the udder, was sufficient to render the elimination of infectious cattle from the dairy herds an integral part of the health activities in the county. In addition to its sanitary significance it is of much economic importance, which in itself has a direct bearing on the living conditions and physical vigor of the people.

In 1917, the Federal Government, in cooperation with the states, undertook the eradication of bovine tuberculosis by the so-called "accredited-herd-plan." This provides that all initial tuberculin tests and retests shall be made by veterinarians in the employ of the government, state or county, but that after the herds are accredited* the owner is to continue the test at his own expense with the veterinarian of his choice. Soon after the adoption of this cooperative procedure, the "area" plan was approved. That limited the testing of cattle to certain areas, such as a township or county, and dairymen who resided outside of these areas were not permitted to test. This procedure was for the purpose of economizing the cost of testing and to provide uninfected areas for the production of healthy cattle.

The above statement sets forth the situation relative to the control of bovine tuberculosis in the state at the time the demonstration in Cattaraugus County was started. New York was among the first of the states to cooperate with the government in carrying out the accredited-herd-plan. Already

* Under this plan a herd is accredited when it has passed two consecutive annual tests, or three semi-annual tests, without reactors.

considerable tuberculin testing had been done, in accordance with this plan, toward the complete eradication of this disease from the dairies of the state. It should be understood further that New York was the second state in the Union to undertake officially the elimination of bovine tuberculosis by the "test and slaughter" method, but it did not make substantial progress until the adoption of the accredited-herd-plan.

The local understanding relative to the extent of human infection from tuberculous cattle is expressed in the interpretation of this subject by Dr. Stephen A. Douglass, then county health officer, in answer to an inquiry relative to the prevalence of human infection in the county. He wrote:

"We have in our roster at this time 129 cases of tuberculosis in children (hilum or "juvenile" type). These have been diagnosed from more than 2,000 examinations of children, the majority of whom are in the 5- to 12-year age group. In going over our records from the standpoint of bovine infection, indicated by gland, bone, acute miliary and meningeal tuberculosis, we find about 4 per cent of the cases could be regarded as of bovine origin. Among sixty-five children admitted to the County Sanatorium since 1915, twenty could be regarded as having bovine infection."

The conservative methods that were employed in the treatment of the cases precluded the possibility of obtaining tuberculous glands from any of these cases for the purpose of making a positive examination to determine the type of tubercle bacilli present. Consequently, we were not privileged to verify or disprove the clinical conclusions drawn relative to the infection of children with bovine tuberculosis.

In the spring of 1923, I was requested, as a member of the Advisory Committee on Bovine Tuberculosis, to attend a conference at Salamanca on April twelfth, that had been called by the County Health Officer, Dr. L. D. Bristol, and the County Farm Bureau Agent, Mr. O. H. Chapin. The object of this meeting was to discuss bovine tuberculosis eradication and to consider propositions made by various local people who were invited to attend the conference. A further purpose seems to have been to review the work that had been done in the county prior to that time and that was progressing under the accredited-herd-plan operating in the state. The conference was attended by members of the Tuberculosis Committee of the Board of Supervisors and a number of other people in Cattaraugus County interested in this work. Dr. H. A. Patterson read the following resolution from the Board of Supervisors that had been introduced by Mr. J. A. Bonsteel of Farmersville, and passed by the Board in December, 1922.

"BE IT RESOLVED: That $6,000 is hereby appropriated to the Farm Department of the Cattaraugus County Farm and Home Bureau Association to be used for the purpose of eradicating bovine tuberculosis within the County, and that,

"The County Treasurer is hereby authorized and directed to pay the said sum of $6,000, or so much thereof as may be required, upon the presentation of proper vouchers, signed by the President and Treasurer of the Cattaraugus County Farm and Home Bureau Association, presented through the County Auditor; and the above fund shall be expended by the said Association in full accordance with the rules and regulations of the Milbank Demonstration."

The broad question of bovine tuberculosis eradication was discussed from various angles and the different methods for its control presented. Mr. Chapin pointed out that an intensive educational campaign had been in progress in the county for the past two years, preparatory to the wide application of its accredited-herd-plan; that meetings had been held in almost every community and that they had been well attended. Personal visits had been made to more than 3,000 farmers to obtain their approval to test. It was his opinion that further efforts should be made along educational lines in connection with the disinfection of stables after the reactors had been removed, and information relative to the source of animals to be purchased for replacements. He stated that there were then 300 dairies in the county that should be retested, but that there was no one available to do the work. Further, Mr. Chapin felt that the testing should be done on the "area" plan but with units smaller than the county.

Up to this time, all of the testing that had been done in the county, under the accredited-herd-plan, was in the township of Otto, which had been nearly once "gone over." Farmers about Olean were anxious to have their herds examined. Dr. Wilbur, who had

done most of the testing in the township of Otto, pointed out that in addition to the community educational work, individual talks with cattle owners had proven to be valuable and that gradually a sentiment was developing among the consumers to buy milk and butter from tuberculin tested dairies only. Dr. Wilbur had been appointed recently county veterinarian and Dr. E. L. Wilson, of the Federal Bureau of Animal Industry, had been stationed in the county to assist him.

In May, 1923, the Tuberculosis Committee of the Milbank Memorial Fund met in New York City with Doctors Linly R. Williams, Donald B. Armstrong, and Mr. John A. Kingsbury. At this meeting I reported the situation, as it had been presented at the conference in Salamanca, relative to the eradication of bovine tuberculosis in the county. It was decided that I should interview the state and federal authorities relative to their accelerating the testing in Cattaraugus County, with the hope that it could be completed in the near future. In obedience to instructions, I explained to Dr. John R. Mohler, chief of the Federal Bureau of Animal Industry, and to Commissioner Berne A. Pyrke, of the Department of Farms and Markets, Albany, that the Milbank Memorial Fund was very anxious to have bovine tuberculosis eliminated from Cattaraugus County as promptly as possible in order to remove all possible danger of human infection from milk. Each of these officials expressed a willingness to cooperate with the Board of Supervisors and the demonstration, and to test officially as many of the cattle in the county as possible.

The supervisors of Cattaraugus County had appointed a tuberculosis committee to direct the eradication work and to cooperate with the state and Federal veterinarians. This committee functioned through the Farm Bureau Agent, Mr. O. H. Chapin, who was very willing to cooperate with the demonstration, as well as with the state and Federal authorities in hastening the testing. It was Mr. Chapin's untiring effort that enabled the eradication work to advance as rapidly as it did.

Cattaraugus County contained approximately 80,000 dairy cattle, distributed in 4,205 herds. From 1920 to 1923, when this work began, there had been tested under the accredited-herd-plan, but prior to the adoption of the "area" system, some 17,000 cattle with 2210 reactors, or 13% of the animals tested. Here, as in many other places, there was considerable opposition on the part of the owners to have their cattle tested, notwithstanding the educational work that had been done. Fortunately the county, as compared with many dairy districts, had a comparatively small percentage of tuberculous cattle.

At this time, Cattaraugus County was not included by New York State in the territory where the "area" plan was in operation. As the health demonstration included the entire county as a unit, it was desirable to have the state and Federal governments accept the county as a unit in the "area" plan for eradication purposes. An important step for the Tuberculosis Committee was to have Cattaraugus County accepted by the state as an official "area."

The committee met Assistant Commissioner C. P. Norgord of the Department of Farms and Markets at Olean, June 20, 1923, to arrange for the testing of the cattle in the county. One of the difficulties was to obtain state money for paying indemnities for condemned cattle. It was impossible to operate in so large an area if money was not available for indemnities. Finally, the commissioner assured us that Cattaraugus County could have $120,000 of the state indemnity money and that we could continue to test until we had 2,000 reactors, at an average indemnity of $60.00. The committee felt that testing should be begun at once. For apparently good reasons it was the desire of the dairymen in the county that the "drive" to test all cattle in the county should not be started until fall. The local opinion was that there would not be over 2,000 reactors in the county. In obedience to the local request, the work was delayed until the latter part of September, when it was undertaken with eighteen veterinarians participating. Of these, six were local practitioners.

The Federal Bureau of Animal Industry and the Commissioner of Farms and Markets were willing to accept the tests of the local veterinarians, but they were unable to pay for their services. The statement from Dr. Mohler on this point is as follows:

"It is noted that in the proposed drive in Cattaraugus County, the services of several local accredited veterinarians will be utilized. This will be entirely satisfactory to the Bureau, and Federal indemnity will be paid for reacting cattle found by those accredited veterinarians who are detailed to participate in the drive and devote their time to that work while it is in progress. In other words, during the drive the accredited veterinarians will be authorized by the State Department of Farms and Markets and will do tuberculin testing, the same as regularly employed county, state and Federal veterinary inspectors."

There were two reasons why local veterinarians should take part in this "drive." First, it was not possible at the time for the state and Federal governments to furnish a sufficient number of veterinarians to complete the test of all the cattle in the county; and, secondly, as the owners were dependent on the local practitioners to continue the testing after their herds became accredited officially, it seemed wise to the committee that they should be familiar with the findings on the initial examinations.

In preparation for, and to make possible, county-wide testing in the fall, the educational campaign that already had been started by the Farm Bureau agent and the local committees was accelerated. Every effort known was put forth by the cooperating agencies to instruct cattle owners on the necessity of having their herds tuberculin tested. As a part of this work, I attended the county fair at Little Valley the first week in September and gave an illustrated lecture on tuberculosis and its eradication. The general interest manifested in the subject testified to the efficiency of the splendid work that had been done by the local agencies. The county veterinarian was very helpful in creating an interest among owners for sound herds and safe milk.

It was in the county-wide testing "drive" following the educational campaign of the summer, that the Milbank Memorial Fund rendered valuable aid to the success of the work. The services of local veterinarians were required in making the tests, but the funds for the work provided by the county, together with the thousand dollars that the Milbank Memorial Fund had granted for that purpose, were exhausted. The county health officer appealed to the Board of Directors of the Milbank Memorial Fund for further aid. A special appropriation could not be arranged at that time, as the funds had been budgeted, but the health officer was permitted to use any, or all, unexpended balances from his budget for this purpose. Fortunately, there were such balances from which the local veterinarians could be paid for their services.

A further call for assistance came as the testing progressed. The Commissioner of Farms and Markets in accepting Cattaraugus County as an "area" agreed to do so to the extent of $120,000 for indemnities. The percentage of reactors was found to be higher than anticipated, which required a much larger sum for compensating the owners. After the seriousness of the situation had been presented to the Commissioner of Farms and Markets, in the light of the extraordinary effort that was being made by the supervisors of the county and the Milbank Memorial Fund to remove all possible sources of tuberculous infection, the department consented to allow the county an additional $60,000 of indemnity money. Even with this concession, it was necessary to stop the "drive" after the cattle in twenty-four of the thirty-three townships had been tested.

The testing came to an end the fourth week of October. A total of 52,928 cattle had been tested for the first time. Retests were made on 363 herds, containing 8,735 animals that had been tested for the first time earlier in the year. At the close of the "drive" 3,681 herds, containing 61,663 animals, had been tested. There were 3,614 reactors removed. The percentage of reactors on the initial test was 8.4, and 6.4 on the retest. It was cause for much disappointment that the examinations were brought to an end before all the cattle in the county were examined. In the circumstances it was decided that the cattle in the remain-

ing townships should be tested as rapidly as possible by the county veterinarian, Dr. B. R. Wilbur, aided by an employee of the Federal Bureau of Animal Industry, Dr. E. L. Wilson, who was stationed in the county for that purpose.

The County Board of Supervisors has been consistent in its annual appropriations for this work. The county veterinarian has been diligent in his efforts to complete the tests and to make the necessary retests. He has been assisted by a Federal veterinarian. The number of herds containing reactors has been reduced to a very small number. Mr. Chapin reported in September, 1925, that 13% of the cattle tested in the accredited-herd-plan prior to 1923 reacted. In all the tests made in 1923, there were 65,206 cattle examined, with 7.7% reactors. In 1924, there were 71,003 cattle tested with 4.9% reactors. From November 1, 1924, to September 15, 1925, there were 25,483 cattle, largely in infected herds, retested, with 2.53% reactors. In all there had been removed 11,451 infected animals from the herds of the county.

In May, 1927, Dr. Theobald Smith, chairman of the committee, wrote to Dr. E. T. Faulder, now chief of the Bureau of Animal Industry in the Department of Agriculture and Markets, Albany, relative to the testing of cattle in the county. To this Dr. Faulder replied:

. . . "This Department is especially interested in the eradication of bovine tuberculosis from Cattaraugus County because this is the county selected for a demonstration under the Milbank Memorial Fund and also due to the fact that this county has the largest number of cattle under test under the accredited-herd-plan of any county in New York State."

"I am enclosing a comparative statement which shows that infection in Cattaraugus County has been reduced from 10.3 to .99 of 1 per cent. This is indeed a very satisfactory showing and it is the intention of this Department to retest all infected herds every 60 to 90 days and apply the accrediting test to all herds that have been clean for a period of 12 months so that all herds in Cattaraugus County will be free from tuberculosis at the earliest possible time."

In June, 1928, I visited Cattaraugus County and attended a meeting of the veterinarians where a thorough discussion of the testing of infected and accredited herds in the county took place. The county veterinarian made a favorable report on the retest of infected herds. It is of interest to note that the veterinarians had the county zoned for the purpose of testing accredited herds and that the county and federal veterinarians were testing the infected herds. A difficulty arose in the fact that many owners of accredited herds had arrived at the conclusion that it was not necessary for them to continue the test. It was felt by those present that in many of the herds from which infected animals had been removed, the tests should be continued annually until at least all of the animals that had been exposed previously to the tuberculous ones in the herd had disappeared. This was deemed necessary because arrested cases often continue for many years without giving a reaction, and then become active, when they will react and often spread the germs of the disease.

In July, I obtained a conference at Albany with Assistant Commissioner Henry and the veterinarians under him, together with the federal veterinarians at the department and the one stationed in Cattaraugus County to ascertain what could be done to obtain tests on the accredited herds in the county. The records of the department showed that about 40% of the owners of accredited herds had not made their annual tests. After careful discussion of the subject, Commissioner Henry requested Doctor Berns, the Federal veterinarian in Cattaraugus County, to visit the owners who were not making their annual tests and explain to them the importance of continuing them annually during the lifetime of the animals that have been exposed. His efforts were very successful. In September, 1928, the Department of Agriculture and Markets furnished Table I, which explains the situation relative to the examination of accredited herds. It is believed that in some instances the delay was caused by the local veterinarians who were not able, for lack of time, to do the work. A bill has been introduced in the legislature to enable the state to pay for the testing of accredited herds.

The veterinary practitioners have coop-

erated with the authorities in making the initial tests. Further, in order to facilitate the testing of accredited herds and to make it as inexpensive as possible to the owners, they have zoned the county as set forth in Table II.

Table I. Data concerning the testing of accre dited herds in Cattaraugus County.

Township	Veterinarian	Accredited herds retested, Per cent	Objectors among owners
Allegany	Woodward	100	0
Ashford	Rood	65	6 Inf.
Conewango	Helms	50	1
Cold Spring	Helms	50	0
Carrolton	Fuller	..	0
Dayton	Wilbur	80	2
East Otto	Cleveland	25	2
Ellicottville	Cleveland	25 (½ Cornwell OK)	4
Elko	Fuller	90	2
Farmersville	Cornwell	Up to date	6
Franklinville	Cornwell	50	7
Freedom	James	All but 3 herds	1
Great Valley	Fuller	10	1
Hinsdale	Scutts	100	0
Humphrey	Scutts	All but 6 herds	0
Ischua	Scutts	100	2
Leon	Wilbur	100	..
Lydon	Cornwell	Up to date	4
Little Valley	Cleveland	25	0
Machias	Cornwell	Up to date	2
Mansfield	Cleveland	25	4
New Albion	Cleveland	25	10
Napoli	Helms	(not yet reported)	0
Otto	Cleveland	25	0
Olean	Woodward	100	..
Portville	Woodward	100	31
Perrysburg	Wilbur	90	2
Persia	Wilbur	90	1
Randolph	Helms	95	1
Red House	Fuller	90	0
South Valley	Fuller	50	1
Salamanca	Fuller	10	0
Yorkshire	Thompson	80	0

Table II. Local veterinarians and townships to be tested by each.

Veterinarians, New York State	Townships	Report on herds
F. T. James, D.V.M., Bliss	Freedom	All herds in
L. R. Cornwell, D.V.M., Machias	Machias, Farmersville, Ellicottville, Lyndon and Franklinville	All herds in
L. R. Cornwell, D.V.M., Machias	Ischua and Hinsdale	Accredited herds in
Dana Scutt, D.V.M., Portville	Humphrey and Carrollton	All herds in
Dana Scutt, D.V.M., Portville	Ischua and Hinsdale	Infected and clean herds in
J. A. Woodward, D.V.M., Portville	Olean, Portville and Allegany	All herds in
B. R. Wilbur, D.V.M., South Dayton	Perrysburg, Dayton, Persia and Leon	All herds in
O. E. Helms, D.V.M., Randolph	Conewango, Napoli, Randolph and Coldspring	All herds in
E. C. Cleveland, V.M.D., Cattaraugus	Otto, East Otto, Mansfield, New Albion, and Little Valley	All herds in
V. W. Rood, D.V.M., Springville	Ashford	All herds in
J. W. Fuller, D.V.M., Springville	Great Valley Elko, Red House, Salamanca and South Valley	All herds in
D. W. Thompsett, D.V.M., Delevan	Yorkshire	All herds in
U. J. Pierce, Ischua; Clarence Skeels, Ellicottville, (disinfector men)	Farm premises	

The progress of testing in this county has been beset with many difficulties that for the moment were hard to overcome, but which in the end have been cared for. The whole-hearted cooperation of the practicing veterinarians, the Tuberculosis Committee of the Board of Supervisors and the county agent, with the Federal and state authorities, has enabled the cattle owners of the county to have their herds tested and the reactors removed to a greater extent and within a shorter time than in other counties of the state, with the exception of Essex.

There still remain a few herds that had reacting animals at the last test, but the number of such cases has been reduced to the point where it is expected that this spring the county will be placed on what is known as "the modified accredited list."

Table III shows the present status of the dairy herds in Cattaraugus County relative to tuberculosis. The data were obtained from the Farm Bureau records of January 26, 1929. There are slight discrepancies in the data relative to infected herds between the Farm Bureau records and those of the Department of Agriculture and Markets. This is due presumably to failures in reporting certain tests to both the department and the Farm Bureau.

Mr. C. N. Abbey, who succeeded Mr. Chapin as county agent, has worked diligently to have all infected herds tested and the county accredited as soon as the nature of the disease permits. It is expected that practically all, if not all, of the infected herds will test clean this spring and fall. One difficulty in keeping the county free from tuberculous cattle is the importation of infected cattle by certain dealers. This is a regulatory matter over which the Tuberculosis Committee has no jurisdiction other than appeal. We are assured, however, that the state authorities will exercise every possible care to prevent infected animals from coming into the county.

In a recent report Mr. Abbey has pointed out that the elimination of bovine tuberculosis has been of much economic importance to the county as it has increased the market value of the cattle from ten to twenty-five dollars each. Notwithstanding the fact that the data on herds in the county furnished by Mr. Abbey in January, 1929, compared with that given by Mr. Chapin in 1923, show that there has been considerable reduction in the number of dairy cattle in the county, their actual value is much greater than when the work began. The eradication of bovine tuberculosis has raised the level of dairy efficiency and cattle owners have become more interested in maintaining healthy herds. This is reflected in the greater activity now in evidence to eliminate infectious abortion, another disease of cattle possessed of both economic and sanitary significance.

TABLE III. Number of herds in each township that contained infected animals at the last test, the number that have passed one clean test and the number that are accredited.

Township	No. infected herds	No. cattle in infected herds	No. herds with one clean test	No. cattle in herds	No. accredited herds	No. accredited cattle
Allegany ...	7	83	11	122	187	1,975
Ashford	9	229	29	553	53	2,544
Carrollton ..	2	19	9	100	30	170
Cold Spring.	1	10	4	88	90	1,068
Conewango .	2	52	17	361	138	2,664
Dayton	6	98	19	377	131	2,289
East Otto...	2	36	2	62	62	1,471
Elko	0	0	2	58	28	286
Ellicottville .	8	276	15	334	100	2,283
Farmersville.	15	484	20	498	92	1,949
Franklinville.	8	248	31	957	107	2,507
Freedom ...	25	533	50	992	93	1,543
Great Valley.	2	31	14	221	121	1,943
Hinsdale ...	10	349	9	240	98	1,568
Humphrey ..	11	307	24	537	48	749
Ischua	2	77	5	136	78	1,483
Leon	3	46	12	257	114	1,994
Little Valley.	0	0	4	65	47	842
Lyndon	1	47	27	482	77	1,438
Machias	3	39	35	599	122	2,306
Mansfield ...	3	112	2	54	101	2,361
Napoli	2	29	6	49	112	1,742
New Albion.	4	109	7	139	116	2,146
Olean	2	4	19	129	66	694
Otto	2	59	6	128	48	1,046
Perrysburg .	3	40	14	234	89	831
Portville	6	94	10	109	91	1,397
Persia	1	1	9	117	56	837
Randolph ...	2	54	14	264	148	2,397
Red House..	0	0	3	5	35	261
Salamanca ..	0	0	1	1	53	450
South Valley	0	0	0	0	14	195
Yorkshire ..	9	223	39	684	127	1,596
TOTAL ..151	3,689	469	8,952	2,872	49,025	

A vaccine consisting of living abortion germs has been used under both experimental and field conditions with satisfactory results. Its use should be restricted to the herds in which it is particularly indicated.—Cir. 224, Univ. of Wis.

Shinnery Oak Poisoning

By A. T. KINSLEY, Kansas City, Missouri

REPORTS of poisoning of cattle that have had access to scrub oak are relatively common from various localities in Kansas, Oklahoma, Texas, New Mexico and Utah during the early spring. These reports indicate that poisoning by oak leaves is not at all uncommon and that losses in some pastures in some years exceeds 3%. Two species of oak thus far have been found capable of producing poisoning. One is a scrub oak that occurs in Utah and perhaps portions of Colorado and New Mexico, and the other occurs in Texas, New Mexico and Oklahoma. The type of oak found in the last three named states is commonly known as "shinnery," and the poisonous effects from this species is designated "shinnery poisoning." The present discussion is confined to disturbance induced by the shinnery oak.

The first outbreak of shinnery poisoning investigated by the writer was of some 4,000 three-year-old steers shipped from Western Texas to the flint hills in southeastern Kansas for summer pasturing. Three or four days after this shipment of cattle arrived at the Kansas pastures, the care taker noticed there were several sick and a few dead. This fact was reported to the owner, who promptly ordered an investigation. Of this lot, over one hundred died within the first ten days after arrival at the Kansas pasture, several were severely affected at the time of my investigation and probably died later.

Another outbreak was investigated in Southeastern Kansas, in which about 600 head of steers were shipped from Oklahoma to Kansas grass land. Within twelve days after arrival of this shipment, thirty head had died and some 35 or 40 others were affected, the majority of which probably died.

Causes of Poisoning

The poisonous principle of the oak leaves and buds has not been positively identified. It may be in some way related to tannin, variable quantities of which occur in buds and leaves of the poisonous oak. Poisoning is apparently most common in spring, as the oak buds and leaves are available in most localities before grass. The quantity necessary of oak buds and leaves for animals to consume before showing symptoms of poisoning vary, at least according to feeding experiments. In some instances it seems that a small quantity of the buds or young leaves suffice to produce notable symptoms and even death. In other instances, cattle appear to browse on the buds and leaves for a long period without any notable injurious effect. The poisoning most frequently reported occurs in cattle that are wintered in shinnery areas and changed in early spring to grass land in other states. Thus, shinnery poisoning may occur at considerable distance from the areas in which the poisonous oak trees are found.

It is possible that the intensity of the poisoning in the buds and leaves may vary under different climatic and soil conditions; at least poisoning is apparently more prevalent some seasons than others. No doubt, the condition of the animal is also a factor in the susceptibility to this poisoning.

Symptoms of Oak Poisoning

The usual symptoms of oak poisoning in the beginning are constipation, increased thirst, sunken eyes, extension of the head, dry, cracked muzzle, rough coat and usually a peculiar gait. Affected animals are usually found around water holes because of the increased thirst. If the animals survive for four or five days, the fecal matter will be admixed with blood-streaked mucus. In the later stages there may be diarrhea. Throughout the course of the disease, the temperature rarely exceeds normal, but may be subnormal, respiration may be slightly increased, and usually the pulse is weak and rapid. A large percentage of affected animals die regardless of treatment and the course of the disease is apparently variable, probably depending upon the amount of buds and leaves consumed.

Autopsy Findings

Animals dead of shinnery poisoning are usually extremely gaunt, and if the course of the disease was relatively long, there will be marked emaciation. The carcass is anemic; there may be accumulation of serous blood in the body cavity. In some instances, petechial hemorrhages are observed on the epicardium and pericardium. The kidneys may or may not be tumefied, and show a tubular nephritis. The principal lesions are found in the digestive tract and consist of congestion, inflammation and hemorrhages of the mucosa of the abomasum and intestine. The extent of the lesions varies, but the condition is essential, a gastro-enteritis indicating that the active poisonous principle is an irritant. In some advanced cases, there is necrosis of the superficial mucosa of either the abomasum or intestine. In other instances there is hemolysis and occurrence of hemoglobins in the urine, this condition being found only in the extreme cases.

These findings may confuse the veterinarian with either hemorrhagic septicemia or arsenical poisoning, but a differential diagnosis can usually be made by a careful consideration of the history. If there is any doubt, laboratory examination will suffice to make a positive diagnosis. Thus far, no line of treatment has been found that is of any particular value in relieving the sick. This condition can usually be prevented by providing other feed, so the animal will consume only a small quantity of the buds and leaves of the poisonous oak. Some ranchmen have prevented losses by giving small quantities of cottonseed once daily in the lot during the season when poisoning is most prone to occur.

Not nearly enough is known of shinnery poisoning and the writer will be glad to receive reports from those who have had experience with it.

The major portion of the feed is used in growth by the young animal. Thus it is that proportionately more feed is required to fatten a young animal than is required to fatten one that is mature.

COW DELIRIOUS AFTER ENGORGING ON HARD MATERIALS

Dr. G. P. McCue of Aberdeen, S. D., writes as follows:

"I am enclosing a small amount of seed that I took with some other material from the third stomach of a cow that died exhibiting very peculiar symptoms, and on posting the animal to try and locate the cause of death, I found that she had the third and fourth stomachs packed full of this kind of seeds, and also a large amount of gravel and stones. We decided that was the cause of death, for the reason that the farmer that owned this animal had thrown out a large amount of these seeds from the granary onto the ground where there was also gravel, and the cow no doubt picked them all up. These seeds he told me were sugar cane seeds, but what caused my interest in them was the symptoms that this cow exhibited.

"The owner had never noticed anything wrong with this cow at all before until the morning that I was called to this farm, when he noticed that she did not give much milk and did not eat up her feed; on turning her out of the barn she started to act mad and chased everything on the place, and seemed to also want to bite at everything she could get at, licking the fence posts and gnawing at the barn doors. When anyone came near her she gave chase. When I arrived, they had her tied in the barn; she was making very funny noises, smacking her lips and moving the body from side to side. I did nothing for her, for I wanted to watch her a while. I left the farm for a few hours and when I returned she was dead and on posting I found what I stated above. Can you tell me if this seed would cause the symptoms that this cow showed before death and could they be brought on so suddenly as they came on?"

The seeds consisted of a very large amount of the hard seed of the wild prairie rose, *Rosa pratincola,* some black bindweed, which so far as I know is not injurious, and some green fox tail, *Setaria viridis.* There are no seeds of any poisonous plant in the material sent to me.

Ames, Iowa. L. H. Pammel.

NASAL GLEET IN A RACE HORSE

Will you be so kind as to inform me of the proper treatment for the following:

History: Bay gelding, 8 years old, standard bred, track horse, mark 2:12. Before I bought him last summer, the owner, a veterinarian, told me that he had been ill with an attack of influenza. He seemed to be in perfect health. I raced him all summer and he was O. K., till about the middle of September when I noticed a discharge from both nostrils. The discharge was white and frothy, not purulent, and neither frontal sinuses nor teeth are affected.

This horse is in fine condition at present. He is jogged 10 miles every day, and occasionally there is a slight discharge after work, not every day. I have given him everything that I thought would relieve the condition, which I have diagnosed as nasal gleet.

He has improved under treatment, but is not really cured. He is a valuable horse, and I intend to race him in all the $1,000.00 stakes next season. He is negative to the mallein test.—W. P. B., Quebec.

LOSS OF PIGS FROM UNRECOGNIZED CAUSE

A client of mine lost some suckling pigs and a few shoats three or four weeks ago and his stock hogs are now affected with the same malady. These hogs are running in a dry, hilly pasture and fed corn and kitchen slop.

The disease in question is first manifested by lameness in one or both front legs and there is usually a swelling over both shoulders. These swellings are three to four inches in circumference, rather dense and appear to be confined to the skin. Some of the affected hogs refuse to eat. There is no rise of temperature. A rather large percentage of the affected hogs die in from 4 to 7 days after the onset of the ailment.

Any information and suggestions as to cause, prevention and treatment will be appreciated.—T. E. S., South Carolina.

Reply.—The condition in swine that you have described is not common. Malignant edema and swine erysipelas are infections that involve the skin but the symptoms described in your letter apparently eliminates those diseases. The lameness and succeeding swellings in the scapular region may be due to some common injury, however such injuries rarely prove fatal.

A careful autopsy will probably give some evidence of the nature or character of the disease.—A. T. K.

EYES INJURED BY CREOSOTE

Recently a carload of two-year-old steers was shipped to the Kansas City market in a stock car that had been used for transporting creosoted ties. The cattle arrived in Kansas City in apparently good condition and were taken direct to the pens of a commission company, where they were fed and watered.

When these steers were shown to a prospective buyer, the salesman noticed that several of them had swollen eyelids and there was profuse lachrymation. This condition was thought to have been caused by dust or cinders, and the steers were sold to a speculator. At the time of delivery of the steers, a few hours after their purchase, the eyes were extensively swollen and congested and lachrymation so profuse that they were not accepted, but returned to the commission company.

Careful inspection was made and it was found that there was not only a severe conjunctivitis but also a dermatitis. The cause of the condition was not ascertained until it was found that these steers had been hauled in a car that had been used by the railroad company for ties. The stains from the creosote as well as the odor persisted in the car.

This was the first instance of this kind encountered by the writer, but it was apparent that all the damage had been done and it was suggested that the steers be placed in a shady pen until the irritation had subsided.

What treatment would have been of value? Suggestions from readers of VETERINARY MEDICINE will be appreciated.—A. T. K.

Treatment for Hemorrhagic Septicemia in Cattle

By JOHN W. BROWN, Ft. Scott, Kansas

IN this short sketch of this common disease of cattle I shall not attempt to present any new facts, but just to give testimonial to the good results of some treatments advocated by our better and more experienced practitioners.

About two years ago, our dairy and feeding herds in this section experienced the most severe and varied type of this contagion that we have ever known.

November 10, 1927, a farmer called at my office for some information in regard to his cattle, with the history that in early part of September, he began losing calves from scours. They lost flesh constantly, had sunken eyes, were gritting the teeth and minced over their feed. He called his regular veterinarian, who, he said, seemed perplexed and unable to name the cause of the trouble. These calves and cattle were on pasture at the time. He advised a change of water supply together with change of pasture and that the next one that died be brought to his office that he might get some specimens to send to a laboratory.

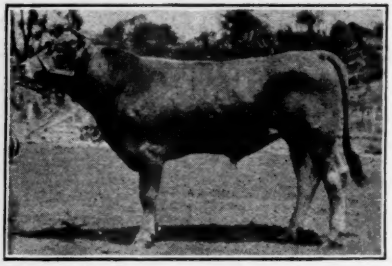
In a few days another died and was brought in to the veterinarian, who sent some blood and parts to a laboratory for examination. The laboratory's diagnosis was hemorrhagic septicemia. The entire herd of calves, but not the cows, were given hemorrhagic septicemia aggressin. There was a slight improvement for ten days; but after that they kept on dying. The cows were later given the same treatment as the calves, but they kept dying one at a time up until November, the day he came to see me. At this time the herd of one hundred and twenty-six head of cows and calves had dwindled to ninety-eight head.

My first procedure before becoming interested in this prospective client's trouble was to inquire of him, had he satisfactorily settled with his veterinarian and discharged him. On being satisfied on this ground, I then told him that from history he had given, I agreed with the diagnosis of the laboratory and the other veterinarian, but would like to make an examination both physical and microscopic. On arriving at his farm some twenty miles away, I found he had these animals up in a farm lot, with a limited amount of shelter, their feed was fodder and corn; the calves were improperly sheltered; their feed was skim milk, calf meal and roughage. They presented a pitiable sight. A number of the cows were due to freshen within sixty to ninety days. I found temperatures ranging from 102° to 106° F. The calves looked hopeless, about fifteen in number were all that were left. Some of the cows showed dysentery; others showed blood clots in droppings. There was some discharge from the eyes and the milk from the entire herd was less than two cans per day.

One of the calves was sacrificed and a postmortem examination made. Typical lesions of hemorrhagic septicemia were found. I made some smears for microscopic examination at the office. I thought of Dr. DeVine's theory for the use of bacterins—large doses repeated in twelve to twenty-four hours. I had always been sold on the old idea of 2cc to 4cc or 6cc doses every three to five days, but here was a good place to try Doctor DeVine's theory and I used bacterin. I gave the older animals 6cc doses; the calves 4cc doses. (It would have been better if I had used 10cc and 5cc doses, I have since learned by experience.) I repeated this dosage in twenty-four hours. In that time I lost six calves, and two cows were not eating and looked bad, but in three days when I went back to give the third dose, the cows were still there,

but not yet out of danger; the calves were still dying; only four being left.

The owner had courage, but his finances were low by this time. I got him to grind corn and mix bran with it for cow feed and to mix alfalfa with his prairie hay. He made shelter for them and the weather got warm for about ten days and the animals made a wonderful improvement. This herd needed minerals and I suggested we add them to the ration, but the owner refused. Altogether, I gave five doses of bacterins, and all went well until the weather changed from warm to extreme cold about two weeks later. Two cows went off their feed and began scouring and passing blood in bowel movements. I was stumped because I was fighting against odds of weather exposure and weakened animals. I decided to separate these sick ones from the seemingly well ones and gave the sick ones a 10cc dose of hemorrhagic septicemia bacterin; seemingly well ones 8cc and repeated the doses in twenty-four hours. Next day there was some improvement and I did not revaccinate until the third day, when I gave 6cc to the sick and 4cc to the well animals. Two cows died and from then until they began calving things looked rosy, but I was worried. As yet not a single cow had lost her calf due to abortion, but I was expecting this sequella.



In the sixty days from the time I began treating this herd they began dropping their calves, only one cow died as a result of parturition. Some of the healthiest calves were dropped from cows that had been the sickest. These calves were vaccinated at about one week of age. Thus, we cleaned up a bad mess by what some might call good luck, and I, too, believed we had been lucky until I duplicated these results in several herds under like conditions. Some may say hemorrhagic septicemia serum should have been used; but in these mixed breed herds and with clients with limited resources, it is too expensive. In some registered herds infected with this disease, I have had some wonderful results with hemorrhagic septicemia serum in doses of 75cc to 100cc, repeating in twelve hours and at time of the second dose, giving a large dose of bacterin to be followed in three days by a smaller dose of bacterin.

In herds where the animals showed nervousness and symptoms mistaken by some for rabies or mold poisoning, I have had good results with large doses of bacterins in beef herds and in dairy breeds with serum and bacterins used simultaneously.

During the latter part of 1928 and the early part of this year, we are experiencing a mild type of this contagion, but many cases, some of which were so mild and peculiar and sudden in attack that one has to be as careful in his diagnosis as in the severe cases. The time required for recovery in these mild cases is as long and sometimes even longer than in the severe cases, but I cling to the large dose of bacterins.

In concluding this article, I wish to state that the herds I have placed on a yeast mineral are not experiencing this trouble so far this year, but several herds that I treated last year without feeding minerals have had outbreaks this year, which leads one to believe that a good mineral supplementive with yeast builds up the animal and gives it greater resistance to the bi-polar organism.

I use the aggressin only in non-infected herds and recommend Vitamineral added to the ration unless western alfalfa is fed. Although the aggressin is more economical, I have never used it in an outbreak since the first instance referred to in the beginning of this article.

Give a good bacterin in large doses and in high bred herds, serum followed by large doses of bacterin, and the loss will be negligible providing shelter and feed are looked after properly, sums up my experience.

CUTI-VACCINATION AGAINST ANTHRAX

According to Besredka[2] (1921) the susceptibility to anthrax infections depends, if not exclusively, at least to a great extent, upon the reaction of the skin. In its relation to all the other organs, anthrax bacteriemia corresponds to a saprophytic invasion; a septicemia develops when the reaction of the cutaneous tissues is feeble and deficient. Such a reaction, first observed in the guinea pig and the rabbit, also occurs in cattle (Vallée), sheep (Mazucchi) and horses (Vélu and his coworkers). The intestinal mucous membranes react like the skin (Baynet, Cernaianu and Suchatzianu); the same can be said of the brain (Cernaianu and Suchatzianu); this is explained by its ectodermal origin.

Cuti-infection should correspond to cuti-immunity and this can be obtained by cuti-vaccination. This method of immunization has been used in Bessarabia (1926-27) concurrently with Pasteurs method of double vaccination and the Sobernheim method of sero-vaccination, on more than 7,000 animals—horses, cattle, sheep and swine.

Intra-dermal vaccinations are made in the region of the neck or shoulder in horses, into the caudal folds in cattle, in the lower third of the under side of the tail in sheep and in regions where the skin is thin, as in the vicinity of the ears, around the anus or inside of the thigh in swine.

The two Pasteur vaccines that were used for the subcutaneous vaccinations are injected in the same doses intradermally, 1cc for cattle 0.5cc for horses and 0.3cc for small animals. These injections are repeated after the same interval, eight days. Our experience demonstrates that a single injection of Pasteur's second vaccine will give satisfactory protection.

The advantages of intradermal vaccination over the classical Pasteur method—the subcutaneous injections—are as follows:

1. Absence of all general reactions—fever, malaise, etc.

2. The local reaction is reduced to a minimum; often imperceptible, limited to the formation of a nodule from the size of a pea to an almond which disappears in a few days.

3. Rapid production of immunity, it appears after 48 hours and is very well developed after three days; it is more pronounced, more lasting.

4. No contra-indications whatever have to be considered because no general reaction occurs. Pregnant animals as well as animals that are being worked can be vaccinated with impunity.

5. The injections have to be made very carefully and can therefor not easily be imitated by empirics.

6. It is a valuable method in districts where animal husbandry is well developed—an epizootic can be arrested in 48-72 hours.

Immunity conferred by cuti-vaccination lasts on an average for six months. It is therefor advisable to vaccinate twice a year, especially when the animals are very valuable.

[2] Original published in Berliner Tieraerzliche Wochenschrift, No. 28, July 1928. Abstract by Ch. Van Goidenshoven, in Annales de Medecine Veterinaire, page 47, Nov. 1928. Translated by C. H. Schultz.

BULKY FOOD AND WORM INFESTATION

E. Mitscher, who raises silver foxes himself, discusses the habits of wild foxes. He says that they are not, like the cats and sables, real hunters, but rather scavengers, disposing and living off the remnants of carcasses left by these animals. These remnants consist largely of skin, with a great deal of hair, large bones, not a great deal of flesh, of tendons and parts of intestines. He states that it is this bulky food, especially the great amount of lime from the bones, which renders conditions in the intestinal tract (inimical) unfavorable for the develop-

*Translated by C. H. Schultz, Chicago. Original in *Der Deutsche Pelz Zuechter*, 1929, No. 11. Abst. in *Tieraerztliche Rundschau*, 1929, No. 11, p. 204.

ment of worms. Wild foxes suffer less from worms than animals raised in captivity. He recommends, in order to avoid losses from worms, to give silver foxes more bulky food; once weekly a chicken with the feathers or a rabbit with the skin; coarse wheatbran also gives good results. He prefers garlic, onions and turnips to the usual anthelmintic remedies.

TREATMENT OF VERMINOUS BRONCHITIS IN CATTLE

Veloppe,[1] discusses the different methods that have been advocated in treating verminous bronchitis. He has obtained the most satisfactory results from intratracheal injections of one part of tincture of iodin in ten parts of benzine. He has treated a great number of animals and states that the advantages are as follows:

1. Verminous bronchitis in cattle can with satisfaction be treated by intratracheal injections of a mixture of tincture of iodin and benzine.

2. Grown cattle are not disturbed by such injections; in animals that are less than a year old, the reaction is sometimes rather severe. Respiratory syncope may be marked, but has never been serious.

3. Doses of ¾ to 2½ fluid drams are readily tolerated by the bronchial epithelium, even when inflamed.

4. The injections must be made slowly through the first inter-annular space.

5. The effect of the injected fluid on the parasites in the bronchial branches (tubes) is well marked, so that usually only two injections are necessary. Only the most serious cases required four injections.

This method of treatment has proved safe, efficacious and economical.

(Motor-spirit or gasoline is not benzine. Crystallized iodin is soluble in benzine or petroleum ether, but not in gasoline or motor spirit. Translators note.)

[1] Translated from Abstract in *Annales de Medicine Veterinaire*, December 1928, page 528. Original in Revue de Pathologie Comparee, Jan. 1928. Translated by C. H. Schultz.

OBSERVATIONS IN TREATING CANKER OF THE FOOT*

K. Schuppe was able to cure about 150 horses, 300 feet were affected; by many different methods, all after more or less lengthy treatment. Not one of the different methods proved to be entirely satisfactory however. Treatment with choramin gave the best results.

A very obstinate case, in which all other remedies failed, enabled him to make this observation. When the dressing was changed for the first time it was noted that the disagreeable odor had disappeared and that the condition was improved. This marked improvement did not continue; in spite of treatment with crude chloramin extending over several weeks, no definite progress was made. It was observed that after the second or third dressing the discharge was more mucoid and glassy. Treatment with copper and oakbark was therefore applied. After the third dressing of copper and oakbark a most surprising improvement of the entire lesion could be observed. When the dressing was changed for the fourth time the entire defect, which had resisted all previous treatment for so long a period, was covered with a thin layer of horncells.

In a number of other cases of canker of the hoof this method of "mixed treatment" has also produced satisfactory results. According to the author the effect of treatment with crude chloramin causes certain changes in the horn producing layer and an increased permeability of its tissues, so that the subsequent treatment with copper and oakbark will usually bring about remarkably rapid healing. By this method the treatment, which usually required 70 days, was reduced to an average of 37 days. This mixed method of treatment also had the advantage that the horses could be worked during the entire period of treatment.

*Translated by C. H. Schultz, Chicago. Original in Deutsche *Tieraerztliche Wochenschrift*, Vol. 37, No. 1, p. 1-5, Abstract in *Tieraerztliche Rundschau*, 1929, No. 10, p. 177.

The Hatchery and the Veterinarian in the Control of Poultry Diseases*

By C. A. BRANDLY, Manhattan, Kansas

UNTIL recently the veterinary practitioner has not, as a rule, been greatly concerned in the poultry industry from a disease control standpoint. Economic factors largely influenced this attitude, for there was little demand to control disease among flocks that were considered of negligible value. Furthermore, there did not exist, until recently, the many disease problems that have developed with the rapid growth, intensification and specialization of the industry.

Obviously, in this phenomenal development, the modern hatchery has played a major role. Modern business principles and rapid transportation have facilitated the development of hatching and distribution of chicks to the point that it is the greatest single factor in this remarkable expansion.

At present, the baby chick is the chief market commodity of the hatchery and its importance in the control of poultry disease has increased in proportion to number and distribution.

The progressive hatcheryman has made a sustained effort to improve the quality of his chicks. The buying public has responded to this effort by an increased interest in selecting and purchasing dependable products of the incubator. However, the progress in controlling the diseases of baby chicks, as well as those of which the chick may serve as carrier, has not been rapid enough to cope with the situation.

A closer cooperation between the producer and distributor of baby chicks and the veterinarian is essential if great losses to the poultry industry are to be averted.

The veterinarian, because of his fundamental technical and scientific knowledge, is fitted to advise and suggest methods of disease control that are not readily understood or applied by the hatcheryman or the general poultryman.

The most important problems that concern the hatcheryman in producing and marketing baby chicks are those concerned with disease. He must look to the control of disease (a) previous to incubation, (b) during incubation, (c) after hatching and during distribution.

The intelligent hatcheryman realizes the importance of high-grade, vigorous parent stock. That his flocks be kept in a state of health and vitality during the breeding season has been stressed. Proper management and sanitation are essential factors in maintaining these conditions and incidentally they enhance disease resistance. That the breeding flocks be free from such diseases as bacillary white diarrhea and so-called "infectious, or range paralysis" has been given particular emphasis, although it is apparent that other diseases must be given more attention. Tuberculosis and fowl typhoid, in addition to their general serious effects on the flock, may be transmitted through the egg. The close relationship of typhoid to bacilliary white diarrhea and its effect upon the agglutination test makes it of particular interest and importance.

The nature, dissemination and control of bacillary white diarrhea is generally known by the veterinarian and the hatcheryman. This dread scourge of poultry can be eliminated at its source by means of the agglutination test. It is claimed by some that the pullorin (intradermal) test will serve this purpose as well as the agglutination test. Until this test has proved equally as effective as the agglutination test, or more effective, it cannot be recommended by the veterinarian or used to the advantage of all concerned.

At present the hatcheryman depends almost entirely upon the veterinarian to con-

*Contribution 112, Department of Bacteriology, Kansas State Agricultural College, Manhattan, Kansas.

duct the agglutination test. This work can be done by the practitioner with little expense and a reasonable profit. The test pays from five to ten cents per bird and, under various conditions, veterinarians in the field have reported that they have collected the samples and made the test on 500 to 1,000 birds a day.

The hatcheryman often finds it necessary to rely upon the veterinarian to impress upon the flock owner the importance of strict sanitation in conjunction with testing to control and eradicate bacillary white diarrhea. The poultryman, unless he is well informed, is inclined to consider the test as a cure-all regardless of sanitation and management of the flock.

Control of bacillary white diarrhea by breeding strains and flocks that are resistant to the disease offers some promise, but this means as applied to the poultry of an unlimited area is impractical.

So called "infectious" or "range" paralysis is apparently transmitted through the egg. This condition is rapidly becoming a serious menace to poultry in some sections of the country. In other parts, where it has existed for some time, it has recently shown a decline in extent and distribution. An acquired immunity to the disease, transmitted to the succeeding generation, has been offered as an explanation for its decrease. In this disease, the veterinarian can likewise outline control measures and when necessary distinguish it from other diseases, particularly those associated with "paralysis."

Of the parasitic conditions transmissible through the egg, coccidiosis is becoming more important. Eggs from breeding flocks that show only mild and scattered cases of coccidiosis may serve as a source of infestation of broods of chicks at the many points of distribution. Recognition of a "carrier" condition of coccidiosis in a flock is also eventually the task of the veterinarian.

In considering disease problems that confront the hatcheryman during incubation, two factors of vital importance have recently been emphasized—namely, a high relative humidity and disinfection during hatching and between hatches. A relative humidity much greater than that previously recommended has been found to favor the production of large vigorous chicks. In addition, a high relative humidity serves the important purpose of controlling to a large extent the dissemination of disease, particularly bacillary white diarrhea, by means of the circulating chick down.

A high relative humidity also enhances the germicidal value of the common gaseous disinfectant, formaldehyd. Disinfection with formaldehyd is practiced during the time the hatch is coming off and between hatches, or only between hatches. Proper cleaning and disinfection of the incubator between hatches insures a clean incubator for the next setting. In an atmosphere of 50% relative humidity, or 88° wet bulb thermometer reading, it has been found that formalin, vaporized at the rate of 35cc for each 100 cubic feet of air space, destroys all unprotected vegetative microbial cells in five minutes. Formalin may also be used to advantage in disinfecting brooders and equipment.

Following early removal from the incubator, great care is essential to prevent the introduction and spread of disease during brooding previous to shipment and while the chicks are in transit. Proper attention to shipping and instructions for handling by the purchaser will do much to prevent losses and dissatisfaction to the distributor as well as the buyer.

With the elimination of bacillary white diarrhea by the use of blood-tested breeding stock and the proper management of these flocks, the livability of chicks under various conditions to which they are subjected during the first ten days will be greatly increased. In addition to various infectious bacterial diseases, outbreaks of a highly contagious disease indistinguishable from bird-pox has been reported in baby chicks. The parasitic diseases, particularly coccidiosis and ascaris infestation are responsible for heavy losses in baby chicks.

As the disease problems of the poultry industry are particularly related to the hatching and distribution of baby chicks, an attack on disease at or near its source is the logical means of controlling it.

Bacillary White Diarrhea Becomes "Pullorum Disease"

THE second annual conference of laboratory workers in pullorum disease eradication was held at Brady Laboratory, Yale University, New Haven, Connecticut, May 1, 2, 3, 1929.

The purpose of this meeting was for the further study of the standardization of methods, cooperative tests, and problems with which the laboratories have been confronted; and for the presentation of data collected on experiments which were outlined at the conference held at Amherst in April, 1928.

The twelve cooperating laboratories and their representatives were as follows: Connecticut, Dr. L. F. Rettger and his associates; Delaware, Dr. Frank Hare; Maine, Dr. F. L. Russell and Professor E. R. Hitchner; Massachusetts, Dr. W. R. Hinshaw and Dr. E. F. Sanders; New Hampshire, Dr. Charles A. Bottorff; New Jersey, Mr C. B. Hudson; New York, Dr. E. L. Brunett; North Carolina, Mr. R. S. Dearstyne; Pennsylvania, Dr. R. E. Lubbehusen; Vermont, Mr. L. M. Greene; Guelph, Ontario, Canada, Dr. Ronald Gwatkin; and Dominion Experimental Farms, Ottawa, Ontario, Dr. C. H. Weaver.

At the suggestion of Dr. L. F. Rettger, it was unanimously voted that "Pullorum Disease" should be substituted for the term "Bacillary White Diarrhea" in all future reports and publications by members attending the conference. This is a most desired change which will give the disease in adults, as well as in chicks, a specific name, thus avoiding the confusion now existing because of the many other diarrheal diseases being mistaken for pullorm disease and called "white diarrhea."

A committee consisting of Dr. L. F. Rettger, Dr. E. F. Sanders, Dr. R. E. Lubbehusen, and Dr. Ronald Gwatkin was appointed to study agglutination test fluids. They will select three strains of *S. pullorum* from the best strains now being used by each of the laboratories. These will be substituted for the cultures recommended by the conference of last year. The committee will also make recommendations regarding preparation, turbidity, and pH of test fluids, and expect to have the cultures and the recommendations ready by August 1, 1929. Other laboratories than those represented at the conference will be given opportunity to obtain the recommendations and cultures as soon as they are available.

Some of the other important topics of discussion at the conference were: accreditation for freedom from pullorum disease; establishment of disease-free areas; the proper age to start testing young birds, and progress being made in eradication of pullorum disease in the states and provinces represented.

Dr. George E. Corwin, Deputy Commissioner of Domestic Animals for the State of Connecticut, led the discussion on accreditation. He urged the conference to concentrate on the establishment of disease-free flocks in several areas of the respective states, for the purpose of supplying replacements.

In this connection, Dr. L. F. Rettger emphasized the need at present for laboratories to spend their limited funds in an attempt to establish a few disease-free areas, rather than trying to see how many flocks can be tested in a season.

According to data presented by the Massachusetts representatives, a single test in a season on an infected flock is not a reliable means of establishing disease-free flocks. Poultrymen that have diseased flocks are urged either to retest several times within the season, or to sell their entire flock and buy replacements from known disease-free sources.

In Massachusetts much success has been met in eradication of pullorum disease by

retesting infected flocks each month or six weeks until no reactors are detected. From one to five retests are required, depending on the cooperation of the poultrymen and general management of the flocks following the removal of reactors. Such flocks have been found to be important sources of disease-free stock in that State.

A summary of the agglutination tests made during the 1928-29 season by the laboratories represented at the conference is given in the following table.

	Total Flocks Tested	Total Birds Tested	Total Non-reacting Flocks	Total Birds in Non-reacting Flocks
Connecticut	274	117,082	106	79,055
Delaware	180	50,099	16	3,544
Massachusetts	413	254,512	228	154,334
Maine	141	68,000	96	43,553
New Hampshire	173	124,785	101	77,717
New Jersey	214	98,368	24	7,887
New York	93	No data	No data	No data
North Carolina	300	38,000	38	3,449
Pennsylvania	196	100,340	35	11,616
Vermont	90	19,810	34	3,890
Guelph (Ont., Canada)	162	40,483	19	2,676
Totals	2,236	911,479	697	387,721

BOOK REVIEW

A Laboratory Manual of Physiological Chemistry, by D. Wright Wilson, Professor of Physiological Chemistry, University of Pennsylvania.

This manual is divided into two parts. The first has to do with experiments and tests both physical and chemical of inorganic and organic substances, thus preparing the student for the physiological chemical test and experiments that are clearly and concisely outlined in part two.

This manual is systematically arranged and the essentials are not burdened with a mass of unimportant details. Although this book is primarily designed as a laboratory manual for students, it will be found to be of value to technicians in laboratories, dietitians and to clinicians.

The formulas, charts and tables are aptly inserted and are of considerable value.

The text is attractively arranged and printed. It comprises 272 pages and is bound in cloth; published by Williams & Wilkins Company, Baltimore.

CRUDE PETROLEUM IS BEST DIP FOR HOGS

Crude petroleum, preferably the unprocessed natural oil, is the most satisfactory dip for ridding hogs of lice and the sarcoptic or common mange. The demodectic or follicular mange is less common but more serious when it does occur, and although frequent dippings in crude petroleum check the progress of the disease, the only course advisable is to kill animals that do not respond to treatment, and to fatten the remainder of the herd for market, disposing of all animals. Then premises should be cleaned and carefully disinfected before making a new start with clean hogs.

Dipping is the most effective method of eliminating lice and mange when they are present in a herd. A wallow made of concrete with shallow water for the hogs is a good perventive. Use clean water, until the hogs are accustomed to the wallow. Then add petroleum for a day or two, and return to clean water. Hand applications, spraying, and hog oilers are less effective than dipping or medicated wallows, but may be necessary in winter when dipping is impracticable. Lime-sulphur dips are somewhat less effectve than crude petroleum, and require somewhat more work, as the lime-sulphur solution must be warmed for dipping. The petroleum dip is used at ordinary temperatures.

Farmers' Bulletin 1085-F, Hog Lice and Mange, Methods of Control and Eradication, by Doctor Imes, has been revised and brought up to date, and is now available for free distribution to those interested. It may be obtained free upon application to the United States Department of Agriculture, Washington, D. C. It includes descriptions of the organisms causing the trouble, gives the latest information as to treatments, and includes plans for the construction of economical and effective wallows and dipping vats.

VETERINARY TOUR OF EUROPE

The schedule of the official tour of the A. V. M. A. to attend the Eleventh International Veterinary Congress, London, August 4 to 9, 1930, has been announced. The business management of the tour will be handled by the Beaux-Arts Tours, Washington, D. C., and as previously announced, Dr. A. Eichhorn will be director or conductor of the tour.

The itinerary will include: France, Italy, Switzerland, Germany, Austria, Hungary, Holland and Belgium before the Congress, and England and Scotland subsequently. The party will leave New York the middle of June and reach New York on the return about August 25th, spending six weeks in continental Europe and one week touring England and Scotland. The basic price of the tour from New York to New York is $855.00. More luxurious accommodations may be had on the Atlantic steamers at an additional cost and tourist cabin accommodations on the boats may be had at a reduction of $100 from the basic price. A deposit of $100 is required with the reservation and the remainder of the payment will be due April 7, 1930. The proposed tour is almost an exact duplicate of the A. V. M. A. tour in 1914 on the occasion of the 10th International Veterinary Congress, the price of which was $595.00.

Doctor Eichhorn has conducted several tours of Europe and can be shown on the records to be the right man for that responsibility in connection with the 1930 tour; but the surpassing success of the veterinary tour under his direction in 1914 is all that is needed to guarantee that the next one will be a pleasurable and profitable one for those participating in it. Doctor Eichhorn has a wide acquaintance in Europe. He is familiar with the language and customs in each country that will be visited. To go with him is to make certain of meeting the leaders in veterinary activities in all the countries visited, to have the proper introduction to all institutions of veterinary interest and at the same time to miss none of the "travel features"—sight seeing that the ordinary tourist of Europe thinks he must have.

The organization of the A. V. M. A. Committee for the International Veterinary Congress being now completed, one of the functions of the Committee is to secure as many members to the International Congress from the United States as possible.

The membership subscription is $5.00. The members will receive all the information with regard to the International Veterinary Congress and they will also receive the complete proceedings, which will not only include all the papers and discussions presented but also the resolutions adopted in the different sections pertaining to the subjects to be discussed at the Congress.

These proceedings usually consisted of three large volumes containing upwards of a thousand pages of valuable information to every veterinarian. It therefore behooves every veterinarian to join the International Congress whether or not he desires to attend as the publications alone will more than repay him for the cost of membership.

Subscriptions should be sent to Dr. Adolph Eichhorn, Secretary of the committee, Pearl River, New York.

SUCCESSFUL TREATMENT OF LOCALIZED INFLAMMATION

In August 1928, I was asked to go to the Sharpers' Farm situated in St. Piero a Sieve, where the St. Piero stock is bred, to attend a mare which had foaled twenty days previously and was afflicted with severe mastitis. I was informed by the hostler that the animal had been suffering for five or six days and that he had employed linseed and rice poultices to no effect. The tumefaction was on the increase and extended down to the umbilical area. Temperature hovered around 105° F. and the animal refused food. I ordered an application of Antiphlogistine covering the whole swollen

area. Next day tumefaction was practically unchanged, but the temperature had gone down to 100° F. and the animal was lively and somewhat hungry. I ordered a second thick application of Antiphlogistine. Upon returning to see the mare two days later I found her completely recovered.

Encouraged by this first trial, I employed Antiphlogistine in several cases of equine adenitis, and was able to ascertain that the resolution of abscesses of the intermaxillary ganglia was indeed very rapid and followed by prompt recovery. I used the preparation in a case of pneumonia and in two cases of parotiditis with brilliant results, followed by prompt recovery. I have used it in several cases of bovine mastitis and in three serious cases of pneumonia in dogs. Following these trials, I must acknowledge that Antiphlogistine is a very good preparation, that it can be safely recommended and used with confidence in daily veterinarian practice. We can fully vouchsafe as to its great efficiency.

Florence, Italy. Giulio Sivieri.

BENEFITS OF ERADICATION OF BOVINE TUBERCULOSIS

1. Satisfaction of knowing that the dairy products offered for sale are free from disease germs.
2. Increased value of individual animal and increased herd value.
3. The removal of the tuberculosis animal protects your herd, your children and your business.
4. Elimination of economic losses caused by the disease.
5. Confidence by those who desire to purchase cattle to add to their herds.
6. Ability to ship interstate from accredited herds without further testing for a period of one year.
7. The owner's name is listed in pamphlets published by the respective states and the Bureau of Animal Industry.

E. T. Faulder, Director,
Bureau of Animal Industry,
State of New York.

VACCINOTHERAPY IN UNDULANT FEVER SUCCESSFUL

Cambessédès and Garnier (in the Paris *Medical Journal,* Mch. 23, '29) report complete cure of undulant fever after a single injection of vaccine (*Brucella abortus*) in three patients and after two and three injections, respectively, in two patients. They obtained the same results in twenty-four more patients. They used as a vaccine an antigen prepared from the proteins extracted from dried *Brucella abortus,* 1 cc. of the antigen corresponding to at least 500 milliards of the micro-organisms. Good results can be expected only in patients in whom the subcutaneous administration of the vaccine is followed by an intense general reaction. Therefore the use of large doses of the vaccine is recommended; and usually the failure of the treatment may be explained by the administration of too small doses of the vaccine. If the condition is not cured by the first injection, the dose of the vaccine for the subsequent injections should be doubled each time.—*Jour. A. M. A.,* 6-1-29. Vol. 92, No. 22.

What is said in the foregoing concerning the need for very large doses of the bacterin, doses sufficient to induce "an intense general reaction" if curative results are to be obtained, may point the way to a more effective use of bacterins for the cure of infectious abortion in cattle due to the Bang organism. What dose of abortion bacterin is required to produce, in a cow, a general reaction of the sort described? If the minimum dose for a man is 500 billion organisms, what number would be required for a cow?

Liver Flukes are relatively common in goats in some sections of the Pacific coast states. The losses from these parasites have been materially reduced by the systematic use of carbon tetrachlorid.

The *B. tularense* has been found in sheep and cattle. It is possible that this organism may infect also swine. Such being the case, is it going to be necessary for butchers, meat cutters and cooks to handle meat with gloved hands?

Calf Scours and Its Handling*

By R. R. DYKSTRA, Manhattan, Kansas,
Dean Division of Veterinary Medicine, Kansas State Agricultural College

VETERINARIANS are frequently called upon to handle scours in calves. There is some confusion regarding the exact nature of this disease. Personally I have always been able to arrive at the best understanding about the entire trouble by bearing in mind that possibly there are at least two distinct diseases in valves, the outstanding symptom of which is scouring.

The first of these two diseases is acute gastro-intestinal catarrh of sucklings, a non-specific condition frequently observed in all young creatures, but in this paper the discussion in regard to it will be limited to its appearance in calves.

Non-Specific Scours of Calves

This acute gastro-intestinal catarrh in young animals may be ascribed to various factors. It is a well known fact that in newly born creatures the gastro-intestinal tract is very sensitive to almost all abnormal conditions. At the beginning of the digestive tract we find that saliva is present to only a very limited extent, that the epithelial covering of the entire digestive tract is poorly developed, that the muscular coat is not yet sufficiently vigorous to exert its normal physiological functions, that the gastric juice is not secreted as it should be, and that the first three compartments of the stomach are practically functionless so that food goes directly to the abomasum.

If we bear in mind the factors mentioned in the preceding paragraph, then we can readily understand that any abnormality is likely to cause a derangement of these organs. If the mother is affected with mastitis, cow-pox, or specific infections of the udder such as tuberculosis, or if the mother is fed on improper or spoiled food, there is bound to be an unfavorable reaction in the young animal nursing her.

In those calves that are artificially fed, the disturbance to the digestive organs is likely to be set up by insanitary methods of feeding, improper feeding from the standpoint of quality or quantity, as well as the consumption of extraneous indigestible or contaminated food.

In some of these cases a very important factor in predisposing to an attack of acute gastro-intestinal catarrh is that the young creature has not been permitted to obtain its share of colostrum and therefore the meconium has not been promptly discharged.

White Scours

The second diseasee in which scours is manifested is really of much more significance than acute gastro-intestinal catarrh. This second disease is true white scours, a condition due to a variety of infections, but more particularly it may be said to be a coli-bacillosis. It is contended that at times it may be due to pyocyaneus infection, at other times to abortion infection, and sometimes the infections are undetermined.

Infection with these organisms in many instances is undoubtedly pre-natal. This statement is of considerable significance because it indicates that the calf is born with the disease, and therefore the symptoms are frequently recognizable within the first 24 hours after birth. This does not eliminate the fact that there doubtless are many cases of post-natal infection.

Symptoms. From the standpoint of symptomatology, the two varieties of scours in calves resemble each other closely. There is this distinction, however, that true white scours, because of pre-natal infection, usually becomes clinically recognizable within 72 hours after birth,

* Read before the Eighth Annual Conference of Kansas Veterinarians, held at the Kansas State Agricultural College, Manhattan, Kansas, February 6 and 7, 1929.

while acute gastro-intestinal catarrh of sucklings, being invariably due to post-natal causes, seldom appears until the calf is more than a week old. Another factor that distinguishes the two is that true white scours is more enzootic in character.

Outside of the differentiating features mentioned, the outstanding symptom of both of these diseases is the intense fluid diarrhea. The intestinal discharges are frequently blood streaked or contain masses of undigested material. There is a good deal of straining, and weakness develops quite rapidly. Soiling of the hind parts of the body is very frequently observed. In white scours, involvement of the joints is not uncommon, though this latter feature is probably the result of a simultaneous navel infection.

Prevention of Scours in Calves

True white scours in calves cannot be absolutely prevented, because of the possibility of pre-natal infection. Every attempt should be made, however, to control this insofar as possible, especially in those herds where calf scours is more or less prevalent. As soon as a cow's time for calving approaches, she should be placed in a disinfected maternity stall. The hind parts of the cow's body should be washed off with a disinfectant solution and it is usually a good plan to flush out the vagina with a mild, non-irritating antiseptic just before the calf is born. In order to control the navel infections which frequently complicate white scours, every effort should be made to dry up the stump of the navel cord as quickly as possible. This may be done by the application of 5% formaldehyd, or a frequent application of drying veterinary dusting powders.

It has already been pointed out that true white scours infection may be post-natal and that acute gastro-intestinal catarrh of sucklings is undoubtedly post-natal, and usually is the result of an error in the diet or the material that enters the calf's digestive tract. It is therefore of the greatest importance to place a muzzle on the calf immediately after birth, and this should be kept on for at least three weeks, to be taken off only at the time of nursing or feeding. The muzzling will prevent the calf from consuming contaminated bedding, licking contaminated parts of its own body or of other calves, and controls the ingestion of indigestable material for which the digestive organs are not functionally ready. Needless to state that if the weather is at all inclement, the newly born creature must not be devitalized by exposure.

It is of the very greatest importance that the newly born creature be permitted to obtain liberally of the colostrum. This is necessary not only because the colostrum has a laxative action, but also because it contains antibodies essential to the health of the calf.

If the calf is to be hand fed, particular care should be taken to prevent overfeeding, as this invariably results in non-specific scouring. A general rule that is followed in this connection, and reports indicate that it gives good results, is that a newly born calf, during the first day of its life should receive no more milk than 5% of the calf's body weight. This may be increased 1% a day so that at the end of ten days the calf will be receiving 15% of its body weight. This means, then, that if a calf weighs 80 pounds at birth, it should receive not to exceed four pounds of milk the first day, and this is to be increased by 4/5 of a pound daily. Many practitioners believe that it is an excellent plan to add from 25% to 50% of lime water to the milk, and it should be administered, of course, at bodily temperature. Instead of lime water, the addition of small amounts of milk of magnesia are of value. It is understood that in the very young creature, frequent feeding of small amounts is always preferable and as the calf grows older the number of feedings may be gradually decreased.

In those herds in which true white

scours is more or less prevalent, many practitioners find it advantageous to administer a therapeutic dose of anti-white scours serum immediately after the calf is born. This practice is simply a general preventative one, and is based upon the theory that these agents exert their most beneficial influence if administered before the appearance of the disease.

Treatment of Scours

As soon as symptoms of scouring appear, (many times these may be recognized earlier if a practice is made of taking the newly born creature's temperature once or twice a day), it is best to withhold all milk from the diet. In place of the milk, it may be given a like amount of barley water. The barley water is made by placing three quarts of cracked barley in a three-gallon bucket, then filling the latter with boiling hot water. When this has cooled to a proper temperature, the clear supernatent liquid is used as calf food instead of the milk.

In addition to this change in feeding, the calf should be given frequent injections of anti-calf scour serum, as much as 15cc. every three hours the first day, and on the following day 30cc. morning and evening. If the calf shows evidence of generalized systematic infection, especially as indicated by an elevated temperature, it may be given intravenously 5cc. to 10cc. of a flavine solution, and experience indicates that the simultaneous intravenous administration of 50cc. to 100cc. of a normal salt solution is a valuable stimulant. Furthermore, the calf's digestive tract should be freed as soon as possible of noxious material, and therefore non-irritating laxatives, such as 4 to 6 ounces of mineral oil, or an equal amount of olive oil, should be given. When there is reason to believe that the digestive tract has been fairly well cleared of the harmful substances, we may then resort to the use of astringents to control the diarrhea. In this connection, small repeated doses of bismuth subnitrate are recommended because it forms a protective coating over the sensitive lining of the intestines. Good results are also reported from the administration once or twice daily of a powder consisting of 15 grains each of tannic acid and salicylic acid.

If the animal shows improvement from this treatment, it may again be gradually returned to a milk diet, though preferably the milk should contain no more than 2% of butterfat. In order to hasten recuperation, the addition of one or two raw eggs to the daily diet is a good practice. At the age of about three weeks, if the calf is still doing well, it may gradually be put on a little good alfalfa hay, and in another week some grain may be given it.

Taken as a whole, then, the prevention and handling of scours in newly born calves depends upon an intelligent application of the principles that govern the etiological factors responsible for the disease. If one is fortunate enough to find these calves under conditions where the method of outlined prevention and handling can be carried out with maximum efficiency, good results will reward one's efforts. If these conditions are not present, the results will be proportionately unfavorable. There are no surroundings, however, where cleanliness of the patient and careful nursing cannot be carried out. If you will tell the owner of a desirable calf to handle that calf from the standpoint of sanitation and general care as if it were an infant member of his own family, he is bound to apply the correct principles.

Cystic calculi can be prevented, at least in experimental rats, by the addition of from ½ to 2/3 of an ounce of whole milk to the daily ration.—*Bio Abs.* No. 9957.

Foods rich in vitamin C increase the resistance of guinea pigs against artificial inoculation with tubercle bacilli. A potent cod liver oil also appears to prevent, or at least retard, the formation of tubercles in artificially inoculated experimental animals.—*Bio. Abs.* 9965.

Hexylresorcinol, or Caprokol—A New Germicide Available for Use in Veterinary Medicine

By SAMUEL R. DAMON, Baltimore, Maryland
From the Department of Bacteriology, The Johns Hopkins School of Hygiene and Public Health

THE obvious need of an effective chemotherapeutic agent that could be taken *per os* and that would be eliminated through the kidneys in sufficient concentration to be bactericidal or bacteriostatic or that could be injected intravenously has inspired extensive research within the past few years. Of the compounds developed that fall into the latter category may be mentioned neosalvarsan, mercuric iodid, acriflavin, proflavine and mercurochrome, while under the first heading might be mentioned hexamethylenamin as well as several sulphonephthalein and xanthone derivatives together with certain of the alkyl resorcinols.

It is with regard to one of the compounds of resorcinol—hexylresorcinol (known to the trade as Caprokol)—that I wish to record certain observations in this note at the same time calling attention to some possible uses of this drug in veterinary medicine.

In human medicine hexylresorcinol has been extensively used as an internal urinary antiseptic in the treatment of infections of the urinary tract with the result that numerous cases of pyelitis and cystitis of long standing, that have persistently resisted other treatment, have yielded promptly and completely to this medication. It should be emphasized, however, that this drug is effective only in those infections in which the mucosa from the kidney pelvis downward is involved and in which the renal parenchyma is not invaded. In other words it is strictly an internal urinary antiseptic and not a renal antiseptic.

The administration of this drug may be extended over a long period of time without untoward results as shown by Damon (1) and Henline (2) and it may be given in considerable quantity without toxic effect as indicated by Henline (2) and Leonard and Wood (3) and Leonard (4). The usual dose is 1.8 grams of the drug *per diem* (given in olive oil solution) for a man of 150 pounds and when so given it is excreted by the kidneys unconjugated in such concentration as to cause the urine to be bactericidal. In addition it is excreted at such a rate as to result in a continuous bactericidal action in the urinary tract rather than in the transitory effect obtained with the sulphonephthalein and xanthone derivatives which are excreted by the kidneys to the extent of about 70 per cent in an hour after injection.

New in Veterinary Practice

Thus far, so far as the writer is aware, the use of this drug in veterinary medicine has been extremely limited. At least there have been no reports of its use come to my notice. The conditions of infection of the urinary tract in which it might prove useful are obvious, however, and the fact that it may be given without difficulty and that it is excreted in the urine as shown by chemical test and in such concentration as to impart bactericidal properties to the urine is shown by the following observations.

A cow estimated to weigh about 1,000 pounds was given three doses of hexylresorcinol consisting of a total of 18 grams of the drug dissolved in 18 grams of olive oil. This solution was divided into three portions, put in capsules and given *per os*. Milk and urine samples were collected sub-

sequently at intervals with the idea of determining whether this amount of the drug could be detected in milk or urine by chemical means and if so how soon these fluids would possess bactericidal properties.

The chemical test applied was as follows: To two cubic centimeters of the fluid to be tested 0.25 cc. of chloroform is added and 0.25cc. of 40% potassium hydroxide. This mixture is boiled until one minute after the chloroform has been evaporated. At this point if resorcinol to the extent of 1 part in 50,000 is present a pink color results.

The first dose was given at 1:30 P.M., the second at 7:00 P.M., and the third at 9:00 A. M. the following morning. Milk and urine samples were collected at 4:30 P. M., 8:00 P. M., 9:15 A. M., and 1:00 P. M., respectively. When received in the laboratory these milk and urine samples were tested chemically for detectable resorcinol and for their bactericidal properties by the addition of one loopful of a 24-hour culture of *Bacillus coli* and *Micrococcus aureus* to 2cc. to 3cc. of each. These mixtures were then subcultured at 2 and 4 hour intervals on plain agar slants and the resulting growth or absence of growth taken as evidence of the bactericidal property of the milk or urine sample under consideration.

At this point it may be remarked that the chemical test for resorcinol outlined above is not satisfactory when applied to milk as the end result depends on the development of a pink color and the heating of milk with chloroform and potassium hydroxide alone yields such a color. Thus it was not found possible to detect the drug in milk by this means nor is any other test that might be applied for its detection in this fluid known at the present time. The results of the *Bacillus coli* and *Micrococcus aureus* cultivation tests indicate, however, that no considerable amount of the drug was excreted in the milk as not only were these organisms cultivated from the milk after as much as four hours' exposure but innumerable other organisms making up the normal milk flora grew as well.

In tabular form the results of the tests on urine are shown in Table I.

TABLE I

Results of the examination of bovine urine for excreted hexylresorcinol.

Sample No.	Chemical Test	Time since first dose hrs.	Bactericidal Tests			
			Bacillus coli		Micrococcus aureus	
			2 hrs.	4 hrs.	2 hrs.	4 hrs.
1	+	3	growth	growth	growth	growth
2	+	6½	growth	growth	growth	growth
3	+	19½	growth	growth	growth	growth
4	+	23½	sterile	sterile	sterile	sterile

Inspection of this table shows that as the result of only three doses of the drug this animal excreted urine in less than 24 hours that was bactericidal for *B. coli* and *M. aureus* in less than two hours when these bacteria were exposed to its action. Of course had urine samples been taken between the nineteenth and twenty-third hours after the first dose it might have been shown that the drug was excreted in sufficient concentration to be bactericidal in nearer eighteen than twenty-four hours. Also had subcultures in the bactericidal tests been made in less than two hours it might have appeared that the drug was present in bactericidal concentration after much shorter exposure of the organisms. Regardless of these possibilities, however, it does appear that there may be an expectancy of sufficient excretion of the drug in the urine to impart to it bactericidal properties in less than twenty-four hours after the first dose when it is given in the quantity indicated above. This is in line with the usual experience when the drug is given in human cases.

So much for the use of hexylresorcinol internally. It only remains to call attention to certain other possible uses of this drug in veterinary medicine.

Surface Tension and Germicidal Efficiency

It has been shown by Frobisher (5) and Leonard and Feirer (6) that the reduction of the surface tension of a solution containing a germicide greatly increased the activity of the drug. This action is due to the absorption of the active principle on the surface of the bacteria. Consequently, the germicidal activity of such a solution as one containing 30% glycerin and 70% water in which 1 mgm. of hexylresorcinol is dis-

solved is much more bactericidal than would be one in which this amount of the drug is dissolved in either of these fluids alone. In fact the above proportions of solute and solvents gives a solution representing the best combination from the standpoint of its use in tissue surface disinfection. This is due to its non-toxic and non-irritating effect, to its low surface tension and to the fact that it is active in the presence of organic matter. In this proportion hexylresorcinol is available on the market under the name Hexylresorcinol Solution S. T. 37 which indicates that the surface tension of the solution is 37 dynes per centimeter.

In this form Feirer and Leonard (7) have shown that when applied to the surface of wounds by means of wet dressings hexylresorcinol (Solution S. T. 37) is effective against such pathogenic bacteria as *M. aureus, B. coli, Str. viridans* and *Str. hemolyticus* in less than one minute even in the presence of 3% organic matter. These observations indicate then that this solution ought to find a place in veterinary surgery and in the dressing of all wounds.

Treatment of Mastitis

One other application of this germicidal solution remains to be considered and that is in the treatment of acute cases of mastitis. In this condition Ryan (8) has reported that injections of the solution into the affected quarter by means of a teat-tube appear to result in notable improvement within 24 hours and in eventual subsidance without atrophy or permanent induration. In detail the procedure is to begin the treatment with the administration of a cathartic and the application of hot fomentations to the udder for fifteen or more minutes after which the quarter involved is milked. Iodin ointment is then massaged into the skin and an injection of 2cc. of mixed bacterin given to be followed at three-day intervals by increasing injections until four or five doses have been administered. At the time the first bacterin is injected 80cc. of hexylresorcinol (Solution S. T. 37) is injected into the affected quarter through a teat-tube and allowed to remain 12 hours. This is then withdrawn and a similar dose immediately injected and allowed to remain 12 hours more. At this point improvement is usually noted and the next injection is of 40cc. of the solution diluted with three volumes of water or 160cc. in all. Repetition of this injection may be necessary but the probability of eventual recovery seems good. At any rate the results thus far reported indicate that this method of treatment is superior to any other now in use and it is hoped subsequently to have more results along this line to report.

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Bayer 205 has been found to be of value as a prophylactic and curative agent for mal de caderas. As a prophylactic, one dose of two grams injected intravenously apparently protects horses against the infection. Three doses of two, three and four grams injected intravenously have been successfully used in the treatment of over one hundred affected horses by Migone and Osuna.

This treatment is said to be effective in advanced cases of the disease. This preparation (Bayer 205) appears to have a specific action on the trypanosoma, at least they cannot be demonstrated in the blood, either microscopically or by guinea pig inoculation two days or more after treatment. The control of this disease will materially advance the live stock industry in those tropical countries where mal de caderas prevails.

This finding also suggests the possibility of controlling surra and other trypanosomiasis. In fact, Bolozet, Lavier and Velu report the successful treatment of a horse with dourine in which there was paresis of the hind quarters. Seven grams of Bayer 205 were given in this case and the horse was apparently normal seven weeks later and was used in military operations.

The Milk and Meat Ordinances of Cleveland*

By ROY F. LESLIES, Cleveland, Ohio
Chief Meat and Dairy Inspector

THE milk and meat ordinances of the City of Cleveland like institutions and laws of other kinds came about to fill a need and back of each and every ordinance and regulation there is a reason and purpose.

The meat inspection was taken up first in 1905, I am informed, on account of the many very unsanitary small packing plants about the city and the sale of much diseased and unfit meat. Soon after the meat inspection was taken up, due to the large number of dairy cows slaughtered being found to be tubercular and the bad sanitary conditions in connection with the milk supply, milk inspection was started in 1906, one of the first items under it being the checking back on tubercular animals and if the same were found to be from a herd shipping milk, that herd then being required to be tuberculin tested.

Many different amendments have been made from time to time in the milk and meat regulations until today, we have the present Sanitary Code of the City of Cleveland which includes all Health Ordinances.

So that there may be a clearer outline of the milk and meat inspection in Cleveland the subjects will be taken up separately.

Meat Inspection

Cleveland's present meat ordinance became effective August 22, 1920, the standards adopted at that time being mainly those in force by the United States Bureau of Animal Industry and it has been the continuous policy to work in close harmony with the local office of the Bureau of Animal Industry adopting from time to time the standards and regulations as approved by the Bureau.

A problem that is at hand almost continually with most departments is the financial problem. A check up made in 1923 showed a good bit of money was being spent for meat inspection to furnish inspection services to plants outside of the city, plants that pay no taxes here and no overheads, such as water rents, assessments, etc. It was thought only fair that the plants outside of the city be required to pay the reasonable cost of inspection services and the following section was added to the Sanitary Code:

Sec. 558-a. CHARGE FOR INSPECTION. The reasonable cost of inspection, including time consumed and expenses incurred in travelling by bureau employes outside of the city limits shall be paid by establishments rendered inspection services under this ordinance when such establishments are located outside the limits of the city of Cleveland. When more than one establishment is included in any inspection trip made by bureau employes outside the city limits, the proper proportion of the traveling expenses of said employes shall be paid by each establishment inspected.

This section has helped out greatly in the control of the meat inspection work and in better co-operation with all of the plants under inspection and very few complaints have been made by any of the establishments outside of the city, as they have taken the measure as being fair and that in the final analysis is what maintains all regulations and standards.

Meat inspection being a rather broad subject in itself, we are not able to go into any of the details, but in connection with antemortem inspection and inspection of the meats at the packing plants, inspection is also maintained covering the market houses, fish houses, meat markets, sausage factories, etc. This inspection, is also very important for it guards the meat practically until it reaches the consumer and has almost completely eliminated the handling of any uninspected meat products by any of the meat markets.

* Presented at the 10th Annual Eastern States Conference on Tuberculosis and other Animal Diseases, Springfield, Mass., June 18-19-20, 1929.

The inspection of the sausage factories should be given special attention, and if there is one weak point in Cleveland's inspection of meats at this time, it is the inspection in connection with the sausage factories, as there is only one man assigned to some 60 licensed establishments and in the making of sausage as a protection to the public, an inspector should be on hand at each establishment during the manufacturing period, the same as under government regulations, or at the smaller establishments meats to be made into sausage should be inspected and then perhaps later the amount of sausage prepared, checked with the quantity of meat inspected.

Another arrangement that could be worked out would be for smaller plants to work on the actual sausage making in accordance with a schedule, the same as some of the smaller plants do with meat inspection.

Poultry Inspection

As cities grow many buildings and sections of the city become unfit for the business for which they were originally designed or laid out, a typical example of this was Cleveland's commission district. A few years ago, (October 23, 1925) a conference was held with the poultry dealers of this city explaining that modern sanitation and requirements did not permit of their continuing to operate under the present unsatisfactory and insanitary conditions and surroundings, hardly any of the buildings being provided with adequate light or ventilation, none being rat proof and all having very poor facilities for the handling of crates to check against vermin and disease germs.

As always when a new move is made many objections are forthcoming, the owners of the property involved claimed that by these establishments being there for years, that the Health Department could take no action. Of course, this would seem in a way ridiculous to anyone not familiar with a like situation, but as a general proposition I am sure you will agree that it is always hard to change or remedy some long established custom or condition.

From the first conference to the present modern food terminal in Cleveland was a long, and we might say at times, rather rugged road, but today Cleveland has what no doubt is one of the best food terminals in the world, there being every facility at hand for the modern handling of food in the latest approved way, there being a modern cold storage plant that provides refrigeration for the other establishments, a modern railroad yard for the handling of all of the produce coming by rail, a modern sale shed, and section for the handling of poultry, in all the district covering some thirty acres and being said to involve an expenditure of some five to six million dollars.

It is hoped that in the near future our poultry ordinance may be amended and brought up to date with the provision that all live poultry coming into the city be inspected to guard against culls and tuberculous fowl, and that all crates be required to be sterilized with live steam before being returned to the producer. It is our recommendation here that the government become more interested in the poultry industry and that a start be made towards the Bureau of Animal Industry adopting standards and regulations governing establishments shipping dressed and live poultry in interstate trade.

Milk Inspection

For the information of those caring to go into detail in the inspection requirements, we quote the following ordinances and regulations, copy of which will gladly be provided or mailed to anyone inquiring for the same:

1. Milk Ordinance Sanitary Code Amendment No. 9.
2. Tuberculin Test and 150 Mile Zone Ordinance No. 74943.
3. Electropure treatment of milk, Ordinance No. 82725.
4. Classification of Milk and Cream, Ordinance No. 84460.
5. Homogenization or Emulsification, Ordinance No. 87112.
6. Requirements and Recommendations for the Production of Milk.
7. Grade A Regulations.
8. Class 1 Milk Regulations, under Ordinance No. 84460.

It has long been our contention that

proper production was the first essential and from every angle where quality milk is wanted, this statement becomes more truthful as time goes on and the production field grows farther and farther away from the consuming center.

We submit as the ideal situation, milk properly produced from healthy cattle under good sanitary surroundings, well cooled, of low bacterial content, well handled from the cow to the consumer and pasteurized just before bottling as a final safeguard.

The above is a rather short sentence, but all those engaged in milk inspection work will know that it involves many and trying problems, one of the many problems in Cleveland a few years ago was the badly infected tuberculous herds known to be supplying the city. In many instances country dairy inspectors reported herds of large size plainly showing many animals to be tuberculous, from such symptoms as enlarged glands, emaciation, dull eye, poor condition of hide and hair coat, labored breathing and even in some cases animals so far gone that they were down in the stable being treated by the farmer, who thought in as much as the animal was alive that it might be saved.

Knowing these conditions to be at hand when the government took up the area work, everything possible was done to assist in the area work and to see that the dairymen shipping milk had their cattle tested when the tester was in the district. There was no definite ordinance on the tuberculin test at this time, but under the general ordinance providing that no milk come from diseased cattle, a stand was taken that any dairyman that refused to have his herd tested must believe that he had diseased cattle in his herd, and this being the case, unless his herd was tested his milk could not be shipped.

At first, many dairymen rather than submit to the test, stood for the exclusion of their milk, and attempted to market it in some other city in Northern Ohio.

An agreement was soon arrived at, though, with the Akron Health Department and the Health Departments of most of the other cities in Northern Ohio where when a dairy was excluded from Cleveland, the same would not be accepted in some other city and when this information became general, the dairymen began to co-operate in the testing of their herds. This program was gradually carried on for a few years until a large portion of the milk supply was coming from tuberculin tested herds. A definite ordinance was then passed, Ordinance No. 74943, and from that time on very little opposition developed to the test, and today practically 99% of the milk supply is coming from tested herds, there only being one small section in a county of very low infection where there are a few herds that the State has not yet been able to get to for testing.

In connection with the tuberculin test ordinance there was passed the, so-called, 150-mile zone ordinance, for the dairymen claimed that the testing ordinance was a move to put the local dairymen out of business and allow the larger milk companies to go into other states and procure their supply of milk thus also putting out of business the small milk dealer, and the 150-mile zone ordinance was passed to stop that criticism and also to provide additional finances for inspection services for all those who might apply, for the plants at a distance were becoming a burden on the inspection force and there were many applications on file that could not be accepted on account of there not being an available inspection force at hand.

Both of these ordinances, the tuberculin test and the 150-mile zone have worked out very well and many plants outside of the 150-mile zone are now under complete farm inspection, paying the cost of the same and practically all of the dairy counties in Northern Ohio will soon be modified accredited areas and where a few years ago there was much dissension and discord amongst the dairymen about inspection, today there is good co-operation and compliance with requirements.

In the Milk Code, Section 482, a short paragraph entitled "Approved Dairy" reads as follows:

Sec. 482. APPROVED DAIRY. Any dairy,

having good sanitary surroundings and having a score of 75 or more on the official score card, using small top milk pails, having a tuberculin tested herd, whose owner has signified his intention to co-operate with the division of health, city of Cleveland, in every way in securing a good milk supply, shall be listed as an approved dairy, and a numbered certificate bearing the signature of the official charged with the enforcement of this chapter shall be given him, which shall continue in force until revoked for failure to comply with the regulations or until a change in ownership is made when the certificate may be transferred to the new owner by his applying for such transfer.

Under this section, gradual work towards the classification of milk has been carried on for several years, the city at first employed only one veterinarian on the better dairies and out of all of the dairies shipping during the first few years after this ordinance was passed, only 100 Approved Dairy Certificates were granted, today there are four veterinarians in the field working with the better dairymen and 875 certificates have been granted and up to this time only some 35 certificates have been revoked for failure to comply with requirements.

In the marketing of this milk in the city the dealer is allowed to label it "Class 1 Milk" if the entire supply is bought from approved dairies. Such milk is now retailing for 1c a quart over the average price.

There are six dealers in Cleveland getting their entire supply of milk from approved dairies and there are several other applicants on the waiting list. The farmer is receiving from 10c to 25c per hundred for approved dairy milk over the so-called 50-50 price which is becoming standard for the buying of milk in Cleveland's milk shed.

Other food products have been commonly sold by grade for several years, it was only a few years ago, though, that milk in general began to be sold on a butter fat basis, we believe the modern trend in milk inspection to be the buying of milk on a quality as well as a butter fat basis and under class 1 milk and approved dairies we are grouping quality under a label and attempting to give some credit where credit is due, and to inform the public through the class 1 label as to the better milk and by limiting one grade of milk to one milk plant (excepting such special grades as Certified, Grade A, Guernsey and high butter fat content milk), hoping that the day may come when everyone may have good milk at a fair price.

PARALYSIS IN A DOG

CASE No. 1. A fine female, German Shepherd dog, two years of age, was brought to me July 5th for treatment. The animal came from a distance of thirty miles.

History: The preceding day, July 4th, the owner's children were playing in the farm yard with this dog and a bird dog. They were exploding firecrackers and celebrating this day in general, when suddenly they ran to the house, saying that the Shepherd had fallen and could not raise her head, or even wag her tail. Home treatment was administered such as rubbing, putting water in her mouth with a spoon, etc. The next morning, the dog seemed no better and the owner brought her to my hospital. The dog had never contracted distemper, but she had been wormed several times and had appeared in good health.

Symptoms: The dog was in good flesh, temperature 100.4°F., respiration normal and no foul odor on the breath. The animal could only wag its tail, conjunctiva normal with no sign of congestion. She would lie just where one put her and if one attempted to set her up she would fall over helplessly. The only sign of uneasiness was when we would cease petting her or would leave her alone, she would whine. She could swallow water or broth if given it with a spoon.

I asked the owner if it was possible that the dog had gotten hold of a firecracker or had the children caused one to explode in her mouth? He replied in the negative as he was sure that the children had been careful in their playing. I could find no trace of an injury either. I took a pin and pricked along her spinal column. Her tail would wag, but there was no other movement, not even of the legs. I was non-plussed, but tried to persuade myself that there was a ruptured blood vessel in the brain. Yet, the conjunctivae gave no evidence of it, nor was the animal excited or drowsy. Well, the trouble might be in the spinal column so I

massaged it with a stimulating liniment and gave 1-150 gr. of strychnin. There was no improvement. The dog died in twenty-four hours.

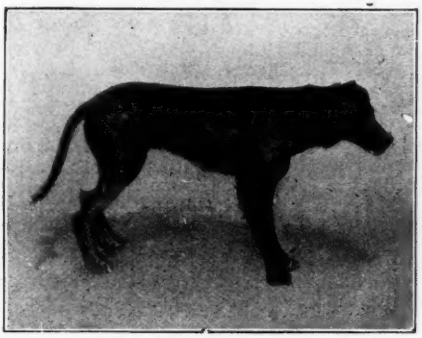
Autopsy: On postmortem examination, all I could find out of the ordinary was that the animal was very much constipated. There was no congestion any place and the stomach was empty. So, I just charged this up as a case that was lost due to ignorance, hoping for more wisdom the next time.

Case No. 2. A Mongrel was brought to me two weeks later (July 20th) for treatment by two farm girls. He presented exactly the same symptoms as did case No. 1, except he had lain around the home the last few days. He did not eat much and had been a little stiff. They had given him a good sized dose of castor oil. They thought he had probably eaten something poisonous. I recalled other cases and tried to convince myself that it was dumb rabies. I finally found that the desired wisdom to handle these cases had not arrived. After all the dog was only a mongrel—in short, it died in twenty-four hours; having received the same treatment given to the German Shepherd and with the same result.

Case No. 3. Another six weeks, and on September 3rd, my attention was attracted to a similar case in a city dog. I readily informed my client that the prognosis was unfavorable. The owner then asked me to kill the animal, which I did. On autopsy, I found excessive costiveness and a little congestion of the lungs. All this time I was reading and searching for something to help me solve this difficult problem.

Case No. 4. Again on October 8, I received an urgent call from the home of one of our most prominent citizens saying that their German Shepherd dog needed attention at once. On arriving, I found that the dog was wholly paralyzed, lying in the yard unable to move. The entire family was almost hysterical, as they and all the neighbors dearly doved the dog. It had indeed had a checkered career, having had a severe attack of distemper and been hurt several times.

My prognosis was as usual. I also informed the owner of my previous experience, and of my inability to cope with this malady. However, I said I would get in touch with the Veterinary College at Manhattan on the long distance telephone. The Dean suggested that I bring the dog to the College Hospital, so next morning my helper and I started on our way to the hospital, some two hundred and seventy miles distant. Quite a trip on the bare chance of saving a dog's life, but my client was willing to stand the cost, and I confessed that I knew not what to do.



A Case of Tetanus

On arriving there, the dog was turned over to the hospital in poor condition. They informed me that they succeeded in keeping him alive for two days. On postmortem examination they found the animal greatly constipated, hemorrhages in the abdomen and thoracic cavity, but could find no trace of an infection to which they could attribute the death. They attributed it, howver, to some toxin resulting from intestinal absorption. They informed me that laxative and intestinal antiseptics were indicated.

Since that time, I have had one other, the fifth case of this same trouble, but it was too far gone for laxatives to do it any good.

I will certainly appreciate any information that will help me to establish a diagnosis or to plan a successful treatment.

Ft. Scott, Kans. J. W. Brown.

CHANGES IN THE ARMY VETERINARY SERVICE

Regular Army

The retirement, for age, of Colonel R. Vans Agnew, effective May 28, 1929, is announced.

Captain Frank C. Hershberger is relieved from further duty as transport veterinarian on the U. S. Army Transport "Meigs" and is assigned to duty at Fort Riley, Kans., effective on or about August 28, 1929.

Captain Henry E. Hess has been relieved from duty at Madison Barracks, New York, and assigned to Fort Hamilton, New York, for duty.

Captain Everett C. Conant is relieved from duty at Fort Hamilton, New York, and assigned as transport veterinarian on the U. S. Army Transport "Meigs," effective on or about August 20, 1929.

Captain Frank H. Woodruff has been relieved from further duty at Fort Hoyle, Md., and will sail about August 20, 1929, for China.

Major Isaac O. Gladish is relieved from further duty at Fort Bliss, Texas, effective about August 10, 1929, and will sail on that date from San Francisco for the Panama Canal Department for duty.

Captain Samuel G. Kielsmeier is relieved from duty at Fort Bragg, N. C., and will sail from New York City on or about September 19, 1929, for duty in the Panama Canal Department.

Captain Herbert K. Moore will report for duty at Fort D. A. Russell, Wyoming, upon completion of his present tour of foreign service in China.

Captain Daniel H. Mallan has been granted leave of absence for one month and 19 days, effective on or about June 27, 1929.

Reserve Corps

Lt. Colonel Nelson Slater Mayo, Veterinary Reserve Corps, has been ordered to active duty, effective July 1, 1929, and will report to the Surgeon General, Washington, D. C., for training.

Promotions:

Cook, Clarence John, to Captain, 1455 Lincoln St., Red Bluff, Calif.

Hicks, Jay Clyde, to 1st Lt., R-2, Tucson, Ariz.

Hughes, Arthur O., to Major, 704 N. Penn Ave., Mangum, Okla.

Ryan, Charles L., to 1st Lt., 7 Pleasant St., Dexter, Maine.

New acceptances:

Beck, John D., 2nd Lt., 39th and Woodlawn Ave., Philadelphia, Pa.

Bendix, Wilmer L., 2nd Lt., Danville, Va.

Bowman, Walter W., Capt., Frederick, Okla.

Cross, Floyd, Capt., 711 Matthews St., Ft. Collins, Colo.

Dowd, Eugene A., Major, 339 Charles St., Boston, Mass.

Ellerman, Homer R., 2nd Lt., 1817 Church St., Evanston, Ill.

Mosher, L. A., Capt., 321 W. Spring St., Lima, Ohio.

Nimphius, H. F. (National Guard), Capt., 761 E. 163rd St., New York, N. Y.

Pease, Roy Herbert, 2nd Lt., Los Banos, Calif.

WAR DEPARTMENT PROCUREMENT OBJECTIVE

Veterinary personnel for the various fixed and mobile veterinary hospitals for the 6-Army mobilization plan.

	1st Period	2nd Period	3rd Period	4th Period
VETERINARY CONVALESCENT HOSPITAL				
Regular Army	1	.....	.....	.....
Reserve	2	1	1	1
VETERINARY EVACUATION HOSPITAL				
Regular Army	9	.....	.....	.....
Reserve	3	4	4	4
VETERINARY GENERAL HOSPITAL				
Regular Army	9	.....	.....	.....
Reserve	21	10	10	10
VETERINARY STATION HOSPITAL				
Regular Army	9	.....	.....	.....
Reserve	6	5	5	5
Total	60	20	20	20

Grand Total Regular Army 28
Grand Total Reserve 92
Grand Total Regular Army and Reserve ... 120

First group upon mobilization—Each of the others in 60, 90, and 120 day increments, providing the preceding unit has been completed.

VETERINARY PUBLICITY

The Eastern Iowa Veterinary Association is continuing its weekly report of outbreaks of infectious diseases of animals in Eastern Iowa.

Weekly bulletins containing this information are sent to all papers in that section of the state. A recent bulletin which is typical of those at this season of the year, lists outbreaks of 14 diseases in 56 different localities, as follows:

Hog cholera in 10 localities,
Mange in swine in 5 localities,
Necrotic enteritis in swine in 5 localities,
Hemorrhagic Septicemia in cattle in 9 localities,
Black leg in 6 localities,
Contagious abortion (cattle), one outbreak,
Calf scours, one outbreak,
Mastitis, one outbreak,
Pink eye in cattle, one outbreak,
Influenza (horse), one locality,
Fowl cholera, eleven localities,
Coccidiosis in chicks, one locality.

By constantly warning the farmers against the tricks and blandishments of the various stock remedy peddlers, the Eastern Iowa Veterinary Association gives the stock remedy people some concern. Recently a company of this sort located at Wellman, Iowa, sort of "put one over" on the veterinarians. Their representatives canvassed the country giving a free moving picture exhibition, which was widely advertised. It included a five reel Western picture and a two reel demonstration of diseases of hogs

and their treatment, "The greatest picture of the kind ever shown." At the end of the second reel, a picture of the officers and members of the Missouri Valley Veterinary Association was shown, the discussion being such as to convey the impression that the veterinarians approved of the methods and products of the hog remedy company.

The Blairstown Press of May 17, carried a first page half tone of the officers of the Eastern Iowa Veterinary Association with complimentary mention of each.

For the week ending June 2 the animal disease prevalence in Eastern Iowa as reported to the public relations committee was:

Swine:

Cholera, 11 outbreaks; Mange, 10 outbreaks; Enteritis, 14 outbreaks; White scours, pneumonia and hemorrhagic septicemia, one each.

Cattle:

Hemorrhagic septicemia, 7 outbreaks; black leg, 11; abortion, 4; rabies, 2.

Horses:

Navel-ill, 2.

Poultry:

Pullorum disease, 1; coccidiosis, 6; cholera, 3; and roup, 1.

It should be noted that "outbreaks," as used above, signifies all the cases occurring in a given locality. It might mean a single case of navel-ill or hog cholera on a dozen or more farms not necessarily bearing any relation to one another other than that they occurred in territory tributary to the same town.

A VETERINARY SCHOOL SEMI-CENTENNIAL

A celebration of the 50th anniversary of the founding of the Division of Veterinary Medicine of the Iowa State College was held during commencement, June 8, 9 and 10, 1929, at Ames, Iowa.

The program included: June 8, an informal luncheon to veterinary alumni and friends, and a program commemorating the founding of the Veterinary Division. Dean Stange presided at the meeting and R. M. Hughes, president of the college, J. H. McNeil of New Jersey and David S. White of Ohio were speakers. The senior, faculty, alumni dinner was held in the evening. Geo. C. Faville, member of the class of 1880, the first class graduated in veterinary medicine, represented the Veterinary Division on the program. An informal get together followed the banquet. The program for the 9th and 10th will be that of the regular commencement exercises.

J. N. Jones of Lewisburg, succeeded W. B. Lincoln as state veterinarian of Tennessee, June 1st.

Doctor Jones has for many years enjoyed a large practice at Lewisburg and been actively identified with every movement for the advancement of the live stock industry in Tennessee.

Doctor Lincoln was appointed state veterinarian from the B. A. I., with which he had been associated for twenty years.

Governor Horton of Tennessee, has issued a commission to George R. White of Nashville as a member of the state board of veterinary medical examiners. Doctor White succeeds Dr. Wm. N. Bell, whose term has expired. Doctor White was state veterinarian under the administration of Gov. Alf Taylor.

GRADUATING EXERCISES ONTARIO VETERINARY COLLEGE

The Spring examinations of the Ontario Veterinary College, Guelph, Ontario, were completed on April 23rd, 1929. The degree of Bachelor of Veterinary Science was conferred on April 30th at a Special Convocation of the University of Toronto on eighteen graduates as follows:

Thomas P. Bett, Toronto, Ontario.
L. N. Brown, Kingfield, Maine.
E. E. Carlson, Milestone, Sask.
G. H. Collacutt, Port Perry, Ontario.
T. J. Cornish, Putnam, Ontario.
Norman H. Cox, Bradford, Vermont.
J. R. Currey, Hartford, Connecticut.
S. A. Davison, Jessopville, Ontario.
I. Erickson, Hanley Falls, Minnesota.
Thomas N. Fortune, Walkerton, Ontario.
William H. Gear, Guelph, Ontario.
Sydney H. Holloway, Dowling, Alberta.
Arnold H. Kennedy, Otterville, Ontario.
Hugh E. Macdonald, Toronto, Ontario.
Robert A. McIntosh, Guelph, Ontario.
Thomas Moore, Oxdrift, Ontario.
Edward K. Seale, Salem, Massachusetts.
Alan C. Secord, Toronto, Ontario.

Three prizes were awarded seniors in general proficiency, the first going to S. H. Holloway; the second to E. K. Seale, and the third to G. H. Collacutt.

KANSAS GRADUATES 15 VETERINARIANS

Among the graduates of the Veterinary Department of the Kansas State Agricultural College this year were two members elected to the Gamma Sigma Delta, an honor fraternity, and one to the Scabbard and Blade, an honor military society. Two prizes were awarded in general proficiency, the first to Karl William Niemann and the second to Lawrence O. Mott.

The graduating class comprised:

Carroll Ferdinand Alexander
Clair Lenna Butler
Frank Howard Callahan
Clifford Vernon Conger
Daniel DeCamp
Finis Ewing Henderson
Hugh Edward McClung
Ralph William Mohri
Needham Branch Moore, Jr.
Lawrence Orville Mott
Karl William Niemann
Charles Robert Omer
Harry Edward Schaulis
Francisco Rioja Taberner
Martin Van Der Martin

COMPLETES 25 YEARS OF PRACTICE

F. L. Roach of Preston, Iowa, completed twenty-five years of continuous veterinary practice in that locality May 16, 1929. To celebrate the silver anniversary of his graduation from the Chicago Veterinary College and location in Preston, all veterinarians of Jackson County, Iowa, were invited to attend an anniversary dinner at the Roach home. The following were present: Mrs. H. A. McIntire and son, Jack; Dr. C. H. Koon; Dr. and Mrs. G. C. Bevan; Dr. and Mrs. F. R. Ahlers; Dr. and Mrs. L. H. Becker; and Dr. and Mrs. F. L. Roach and sons, Kenneth and Vincent.

Doctor Roach has taken an active part in veterinary association affairs and is now president of the Jackson County Veterinary Medical Association. He has served his city as mayor and several terms as member of the school board.

The 36th semi-annual meeting of the Virginia Veterinary Medical Association will be held at the Hotel George Washington, Winchester, Virginia, July 25 and 26. An excellent program has been arranged and a large clinic for both large and small animals under direction of nation-wide experts will be held.

George C. Faville,
Secretary.

OKLAHOMA VETERINARIANS MEET IN JULY

The mid-summer meeting of the Oklahoma Veterinary Medical Association will be held July 9-10, 1929 at Bartlesville, Oklahoma.

A very interesting program is being prepared, chief among which are, a sight-seeing trip, luncheon, and other forms of entertainment, at Mr. Frank Phillips' beautiful wild animal ranch. Members of the Association will be the guests of Mr. Phillips on the first day of the meeting. Veterinarians from outside of Oklahoma are invited to attend this meeting.

Oklahoma City, Okla. C. H. Fauks,
Secretary.

MISSOURI VALLEY VETERINARIANS TO MEET IN OMAHA

Missouri Valley Veterinary Association will hold its next annual meeting July 8, 9, 10, 1929, at the Elks Club, Omaha, Neb.

Program:

11 A. M., Monday, July 8—Opening session.

1:30 P. M., July 8—

The Use of the Emasculatome on Calves, Bulls, Lambs, Pigs and Horses, by E. L. Fitch, Audubon, Iowa.

Some Aspects of Deficiency Diseases in Swine by H. F. Lienhardt, Manhattan, Kans.

Observations on Raising Pigs, by E. L. Dicke, Louisburg, Kans.

Important Parasitic Diseases of Livestock—Benjamin Schwartz, Washington, D. C.

Question Box on Parasites, conducted by Doctor Schwartz.

Monday Night—Aksarben Trip.

9:30 A. M., Tuesday, July 9—

Arecoline Hydrobromid—Its Uses in General Practice, by Thos. P. Crispell, Parsons, Kans.

Case Reports, by P. C. Molgard, Eldora, Iowa.

Observations on Bacillary White Diarrhea Testing, by C. A. Brandly, Manhattan, Kans.

Notes on Small Animal Diseases at the Ohio State University Clinic, by W. R. Hobbs, Columbus, Ohio.

Noon Recess—K. C. V. C. Alumni Association meeting and luncheon.

1:30 P. M., July 9—

Reports of Committees and Election of Officers.

Publicity and Cooperation, by E. C. Jones, Grand Island, Neb.

The American Veterinary Medical Association, by T. E. Munce, Harrisburg, Pa.

The Control of Anthrax in the South, by J. H. Bux, Little Rock, Ark.

Notes on Special Cattle Practice at the New York State Veterinary College Clinic, by M. G. Fincher, Ithaca, N. Y.

Clinic at the Stock Yards—9:30 A. M., July 10.

Demonstration of the Use of the Emasculatome, by E. L. Fitch.

Swine Clinic in charge of H. F. Lienhardt.

Poultry Clinic in charge of C. A. Brandly.

Small Animal Clinic in charge of W. R. Hobbs.

Cattle Clinic in charge of M. G. Fincher.

WISCONSIN VETERINARIANS TO MEET IN JULY

The summer meeting of the Wisconsin Veterinary Medical Association will be held July 15, 1929, in Wisconsin Rapids. Write B. A. Beach, Secretary, University of Wisconsin, Madison, for information concerning the program.

The annual picnic of the Eastern Iowa Veterinary Association will be held at Vinton July 9. Baseball, dancing, golf and other entertainment are planned. This association always turns out to its picnic in force and a large attendance at this one is assured. Veterinarians, not members, and their families are invited.

MANITOBA VETERINARY NOTES

H. R. Estes, of Brandon, Manitoba, who graduated from the Ontario Veterinary College in 1912, died May 25th at the General Hospital, Brandon, from a lingering illness.

Doctor Estes was born in New York State where he received his early education. After graduating from the Ontario Veterinary College he entered the service of the Health of Animals Branch, Dominion Department of Agriculture, and for a time was stationed at Winnipeg and later at Brandon, Manitoba, where he resided for eight years in charge of Tuberculosis eradication work in that district under the Municipal Tuberculosis Order. He was a member of the Veterinary Association of Manitoba, the Professional Institute of the Civil Service of Canada, the Amalgamated Civil Servants, and was a member of the First Presbyterian Church, Bran-

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